

GEOGRAPHIC INFORMATION SYSTEM [PRACTICALS]



E-next

THE NEXT LEVEL OF EDUCATION

By - **Radha Satam**

[TYBSc. IT. B – 13526]

2013-14

Under the guidance of

Prof. Varsha Turkar



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Shyamnarayan Thakur Marg, Thakur Village, Kandivali (East), Mumbai – 400101

[PRACTICAL 1]

VECTOR DATA MODEL

AIM: To create a map of your surrounding area using vector data model (points, lines and polygons)

THEORY:

The **Vector data model** prepares the data in two basic steps so that the computer can process it –

- It uses points and their (x,y) coordinates to represent spatial features as points, lines and areas
- It organizes the geometric objects and their spatial relationships into a digital data files that the computer can access, interpret and process.

Representation of simple features –

Vector data model uses geometric objects like points, lines, and areas to represent simple spatial features. It is ideal for representing discrete features (features that are individually distinguishable features that do not exist between observations).

Dimensionality and property distinguishes the 3 types of geometric objects as well as the features they represent.

POINT

A point has 0 dimensions and has only the property of location. A point may also be called a node, vertex or 0-cell. A point feature is made up of a point or a set of separate points. Example: wells in a particular area, cities in India.

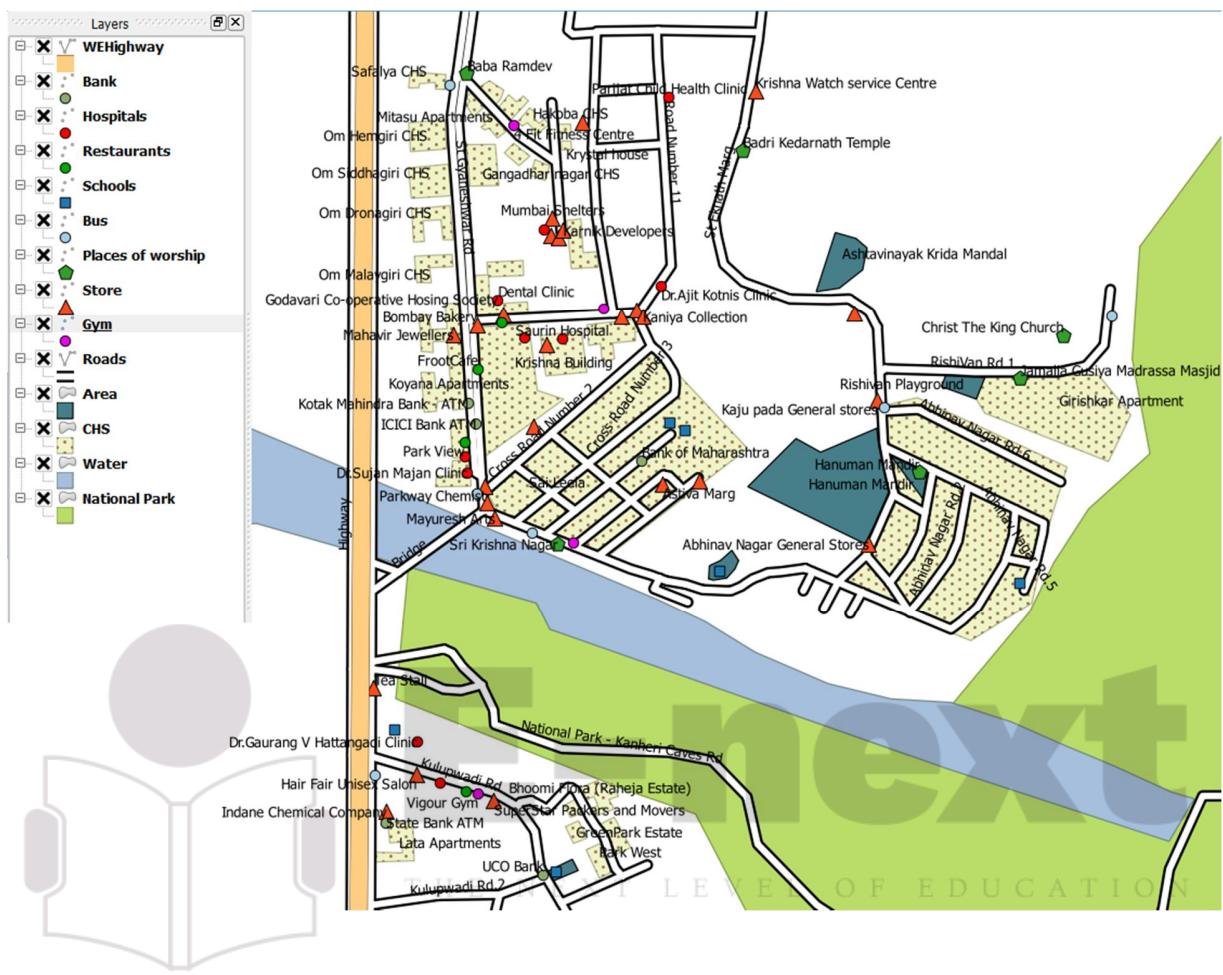
LINE

A line is one-dimensional and has the property of location. Line is also called edge, chain, link or 1-cell. A line has 2 end points and points in between to make the shape of the line. The shape of a line may be a smooth curve or a connection of straight line segments. B-Spline curves are used for representing contour lines/smooth lines for rivers and such. Straight line segments are used for representing human made features like streets, canals.

AREA

An area is two-dimensional and has the property of area (size) and perimeter. Area is also called polygon, face, zone or 2-cell. Area is made up of connected lines. An area may be alone or share boundaries with other areas. An area may contain holes (such as national forest containing private land parcels). The existence of holes means that the area has both external and internal boundaries. Examples of area features include timber stands, land parcels and water bodies. If the scale is large, the cities are represented as polygons; for a small scale map, the city is represented as a point.

SCREENSHOT



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[PRACTICAL 2]

GEO-RELATIONAL DATA MODEL

AIM: Creation of Geo-relational data model for Abhinav Nagar

Data Model –

Data Models describe how the spatial features are represented in a GIS. There are various types of data models – Vector Data Model, Raster Data Model, Geo-relational Data Model, and Object-based Data Model.

Geo-relational data model –

It stores the spatial and attributes data separately in a split system. Spatial data (also known as geo data) is stored in graphic files. Attribute data (info files) is stored in relational database. ID/ feature label is used to link the 2 components.

Screenshots of Attribute Tables –



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Attribute table - Hospitals :: Features total: 10, filtered: 10, ...

Hospitals Attribute Table Data:

| | id | Name | Capacity | Doctors |
|---|----|----------------------------------|----------|---------|
| 7 | 1 | Highway Hospital | 200 | 29 |
| 6 | 2 | Saurin Hospital | 50 | 8 |
| 5 | 3 | Mohit Hospital | 50 | 7 |
| 3 | 4 | Dental Clinic | 15 | 1 |
| 4 | 5 | Dr.Sujan Majan Clinic | 20 | 2 |
| 2 | 6 | Antarang Counseling & Healin... | 20 | 3 |
| 1 | 7 | Dr.Ajit Kotnis Clinic | 20 | 2 |
| 0 | 8 | Parijat Child Health Clinic | 15 | 1 |
| 9 | 9 | Dr.Gaurang V Hattangadi Clinic | 20 | 2 |
| 8 | 10 | Aparna's Health is Wealth Clinic | 20 | 3 |

Show All Features

Attribute table - Restaurants :: Features total: 4, filtered: 4, selected: 4

Restaurants Attribute Table Data:

| | id | Name | Cusine | Reservatio | Veg/NonVeg |
|---|----|-----------|-----------------|------------|------------|
| 1 | 1 | Park View | Indian | Yes | Veg |
| 0 | 2 | FrootCafe | Italian, Indian | No | Veg |
| 2 | 3 | Flavours | Indian, Chin... | No | Non-Veg |
| 3 | 4 | Tambe | Indian, Mah... | No | Veg |

Show All Features

Attribute table - Schools :: Features total: 7, filtered: 7, selected: 0

Schools Attribute Table Data:

| | id | Name | No. of Stu | Teachers | Age group |
|---|----|-----------------------------|------------|----------|-----------|
| 0 | 1 | Abhinav Vidya Mandir | 2000 | 100 | 4-16 |
| 2 | 2 | Chogle High School | 1500 | 150 | 4-16 |
| 1 | 3 | Sri Krishna Vidyalaya | 2000 | 200 | 4-16 |
| 3 | 4 | Okinawa Karate & Kobu... | 100 | 10 | 4-18 |
| 4 | 5 | Little Champs play grou... | 50 | 5 | 3-8 |
| 5 | 6 | Gopal Gardens High Sch... | 200 | 5 | 4-14 |
| 6 | 7 | Sri Sri Shankar Vidya Ma... | 200 | 6 | 10-16 |

Show All Features

Attribute table - Bank :: Features total: 5, filtered: 5, selected: 5

Bank Attribute Table Data:

| | id | Name | Time | ATM |
|---|----|---------------------------|---------|-----|
| 0 | 1 | Bank of Maharashtra | 8-5 | No |
| 2 | 2 | ICICI Bank ATM | 7-12 | Yes |
| 1 | 3 | Kotak Mahindra Bank - ATM | 6-12 | Yes |
| 3 | 4 | State Bank ATM | 24 hour | Yes |
| 4 | 5 | UCO Bank | 7-5 | No |

Show All Features

Attribute table - Roads :: Features total: 25, filtered: 25, selected: 0

Roads Attribute Table Data:

| | id | Name | Speed Limi | Length | Traffic |
|----|----|------------------------|------------|--------|---------|
| 24 | 0 | Highway | 50 | 3702.0 | Medium |
| 0 | 1 | Bridge | 20 | 33.9 | High |
| 15 | 2 | AppaSaheb Sidhaye Marg | 20 | 132.0 | Low |
| 14 | 3 | Abhinav Nagar Rd.2 | 20 | 24.5 | Low |
| 11 | 4 | Abhinav Nagar Rd.3 | 25 | 40.4 | Low |
| 12 | 5 | Abhinav Nagar Rd.5 | 20 | 47.8 | Low |
| 13 | 6 | Abhinav Nagar Rd.4 | 20 | 46.8 | Low |
| 10 | 7 | Abhinav Nagar Rd.6 | 20 | 33.9 | Low |
| 9 | 8 | RishiVan Rd.1 | 25 | 50.6 | Low |
| 8 | 9 | Cross Road Number 2 | 20 | 38.1 | High |
| 7 | 10 | Cross Road Number 3 | 20 | 45.5 | Low |
| 3 | 11 | Cross Road Number 4 | 20 | 40.8 | Medium |
| 5 | 12 | Cross Road Number 5 | 20 | 22.6 | Low |
| 6 | 13 | Cross Road Number 9 | 20 | 22.1 | Low |
| 2 | 14 | St Gyaneshwar Rd | 45 | 350.0 | High |
| 4 | 15 | Cross Road Number 6 | 20 | 23.3 | Low |

Show All Features

Attribute table - Gym :: Features total: 4, filtered: 4, selected: 4

Gym Attribute Table Data:

| | id | Name | Capacity | Membership |
|---|----|----------------------|----------|-----------------------------------|
| 1 | 0 | 4 Fit Fitness Centre | 100 | Weekly, Monthly, 3-month, 6-month |
| 0 | 1 | Vigour Gym | 50 | Monthly, 3-month, 6-month, Yearly |
| 3 | 2 | Prime Physique | 25 | Monthly, 3-month, 6-month, Yearly |
| 2 | 3 | Gold's Gym | 50 | Monthly, Yearly |

Show All Features

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Attribute table - Bus :: Features total: 7, filtered: 7, se...

| | id | Name | Bus Number | Frequency |
|---|----|-------------------|-------------|-----------|
| 6 | 1 | Shantivan | 477,400,123 | 5.00 |
| 5 | 2 | Sri Krishna Nagar | 477 | 3.30 |
| 4 | 3 | Kaju Pada | 477 | 5.00 |
| 3 | 4 | Rishi Van | 477 | 4.30 |
| 2 | 5 | Ganesh Mandir | 300,330 | 6.30 |
| 0 | 6 | Omkarshwar Mandir | 300,477 | 5.00 |
| 1 | 7 | Nancy Colony | 330,300 | 3.00 |

Show All Features ▾

Attribute table - Water :: Features total: 1, filtered: 1, se...

| | id | Area |
|---|----|----------|
| 0 | 1 | 56971.00 |

Show All Features ▾

Attribute table - Places of worship :: Features total: 9, filt...

| | id | Name | Time | Religion |
|---|----|--------------------------------|------|-----------|
| 2 | 1 | Hanuman Mandir | 8-8 | Hindu |
| 1 | 2 | Jamalia Gusiya Madrassa Masjid | 8-8 | Muslim |
| 0 | 3 | Christ The King Church | 8-8 | Christian |
| 4 | 4 | Sri Krishna Nagar | 9-5 | Hindu |
| 3 | 5 | Badri Kedarnath Temple | 8-8 | Hindu |
| 5 | 6 | Baba Ramdev | 8-8 | Hindu |
| 6 | 7 | Hanuman Temple | 9-9 | Hindu |
| 7 | 8 | Ram Ashram Mandir | 7-7 | Hindu |
| 8 | 9 | Omkarshwar Mandir | 8-8 | Hindu |

Show All Features ▾

Attribute table - National Park :: Features total: 1, filt...

| | id | Entry/pers | Entry/car | Tourists/d |
|---|----|------------|-----------|------------|
| 0 | 1 | 30.00 | 121.00 | 200 |

Show All Features ▾

Attribute table - Store :: Features total: 26, filtered: 2...

| | id | Name | Time | Type |
|----|----|-------------------------|------|----------|
| 20 | 1 | Abhinav Nagar Gene... | 9-9 | General |
| 19 | 2 | Mayuresh Arts | 8-5 | Arts |
| 18 | 3 | Mahavir Medical & G... | 8-10 | General |
| 17 | 4 | Parkway Chemist | 8-10 | Chemist |
| 16 | 5 | Omega Filters India | 8-4 | Filters |
| 15 | 6 | Innovia Software | 8-5 | Software |
| 14 | 7 | DHFL Borivali | 8-8 | Software |
| 13 | 8 | Karnik Developers | 8-5 | Housing |
| 12 | 9 | Shree Siddhi's Hair ... | 8-10 | Salon |
| 11 | 10 | KOKORO Graphics Pv... | 8-5 | Software |
| 10 | 11 | Mumbai Shelters | 8-9 | Housing |
| 22 | 12 | Tea Stall | 7-12 | Food |
| 4 | 13 | Kaju pada General st... | 8-8 | General |
| 1 | 14 | Mahavir Jewellers | 8-5 | Jeweller |

Show All Features ▾

Attribute table - CHS :: Features total: 34, filtered: 34, select...

| | id | Name | Resident C | Founded In | Area |
|----|----|------------------------------|------------|------------|-----------|
| 24 | 1 | Mahajan | 20 | 1990 | 19.24000 |
| 23 | 2 | Mahajan Complex | 30 | 1999 | 21.03000 |
| 22 | 3 | Koyana Apartments | 100 | 2000 | 189.00000 |
| 17 | 4 | Girishkar Apartment | 150 | 2001 | 252.40000 |
| 20 | 5 | Bhima Apartments | 50 | 2005 | 36.41000 |
| 21 | 6 | Krishna Building | 100 | 2011 | 50.28000 |
| 19 | 7 | Sai Leela | 10 | 2009 | 3.59400 |
| 11 | 8 | Om Hemgiri CHS | 20 | 2001 | 31.65000 |
| 32 | 9 | Cascade | 100 | 2005 | 14.69000 |
| 27 | 10 | Lata Apartments | 150 | 2008 | 29.01000 |
| 33 | 11 | Gorakshdham | 200 | 2001 | 11.98000 |
| 28 | 12 | Park West | 100 | 2003 | 13.33000 |
| 29 | 13 | GreenPark Estate | 150 | 2005 | 8.23700 |
| 0 | 14 | Dipti CHS | 10 | 2012 | 3.32700 |
| 18 | 15 | Dharam Palace | 20 | 1999 | 83.77000 |
| 12 | 16 | Om Siddhagiri CHS | 40 | 2005 | 36.88000 |
| 13 | 17 | Om Dronagiri CHS | 20 | 2003 | 27.85000 |
| 14 | 18 | Om Malaygiri CHS | 20 | 2004 | 20.06000 |
| 15 | 19 | Veena Co-operative housin... | 40 | 2005 | 26.39000 |
| 16 | 20 | Godavari Co-operative Ho... | 50 | 2005 | 49.01000 |
| 10 | 21 | Safalya CHS | 10 | 2003 | 13.81000 |
| 9 | 22 | Nilma CHS | 20 | 2006 | 8.83300 |

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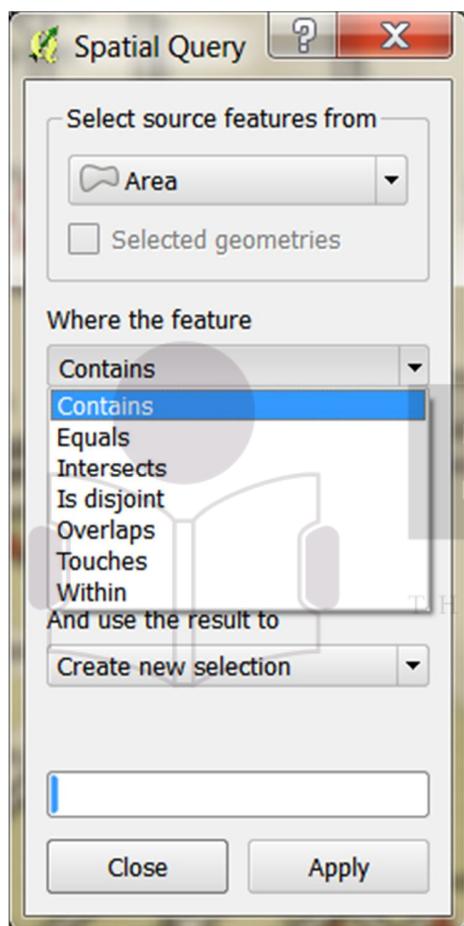
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[PRACTICAL 3]

SPATIAL QUERIES

AIM: To fire all the spatial queries (Contains, Within, Intersects, Disjoint, Touches, Overlaps, and Crosses)



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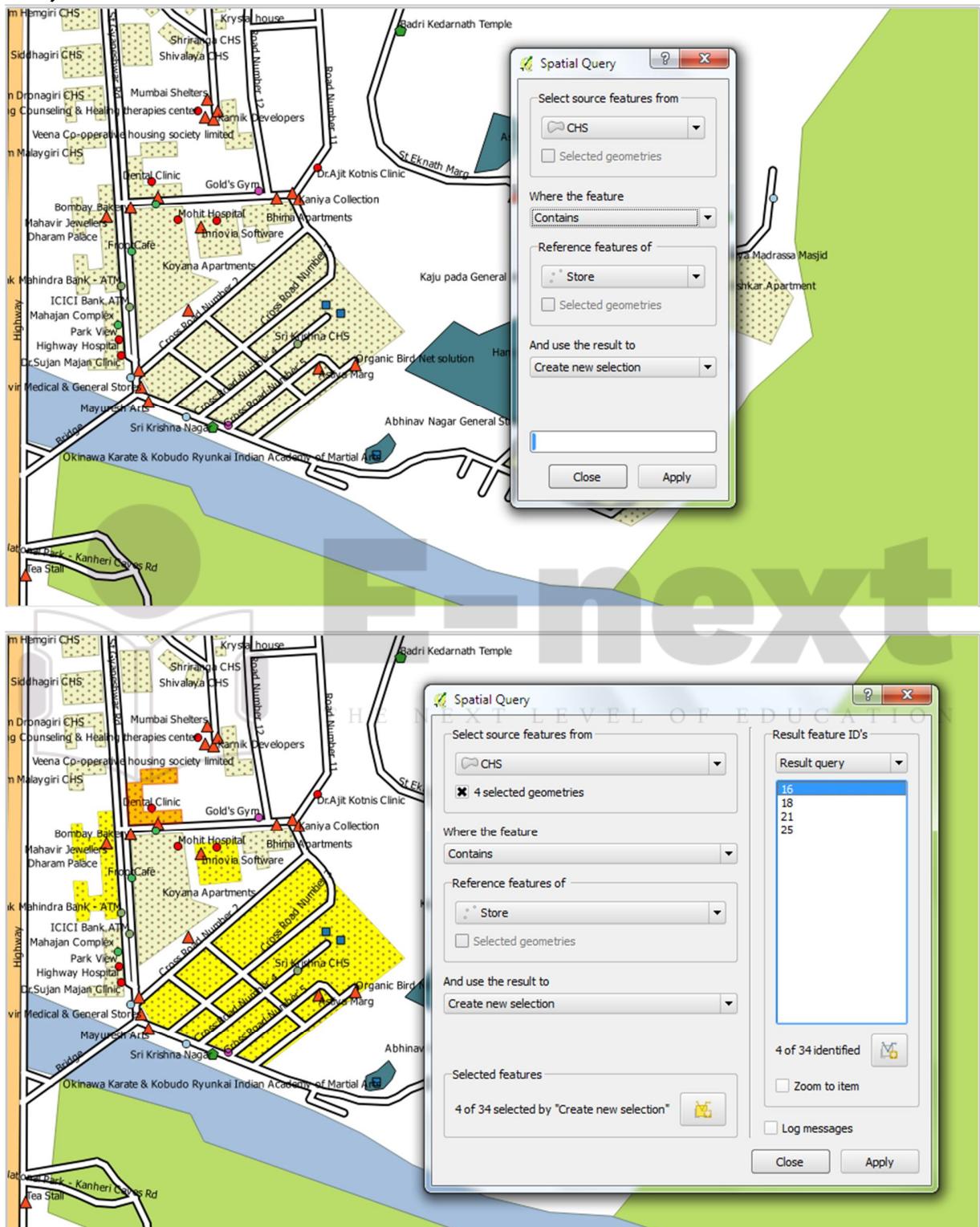
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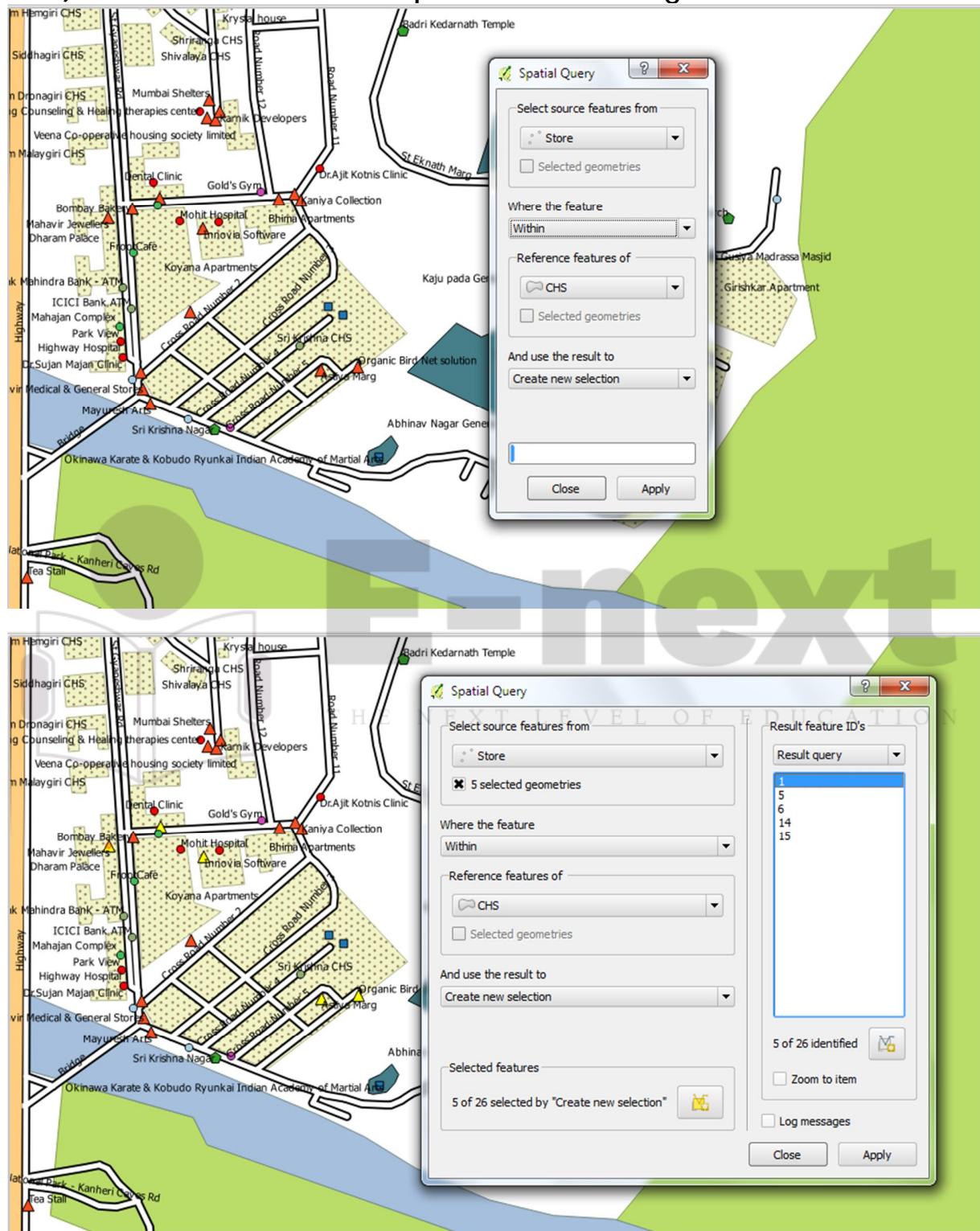
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i) Societies that contain stores –



ii) Stores within Co-operative housing societies



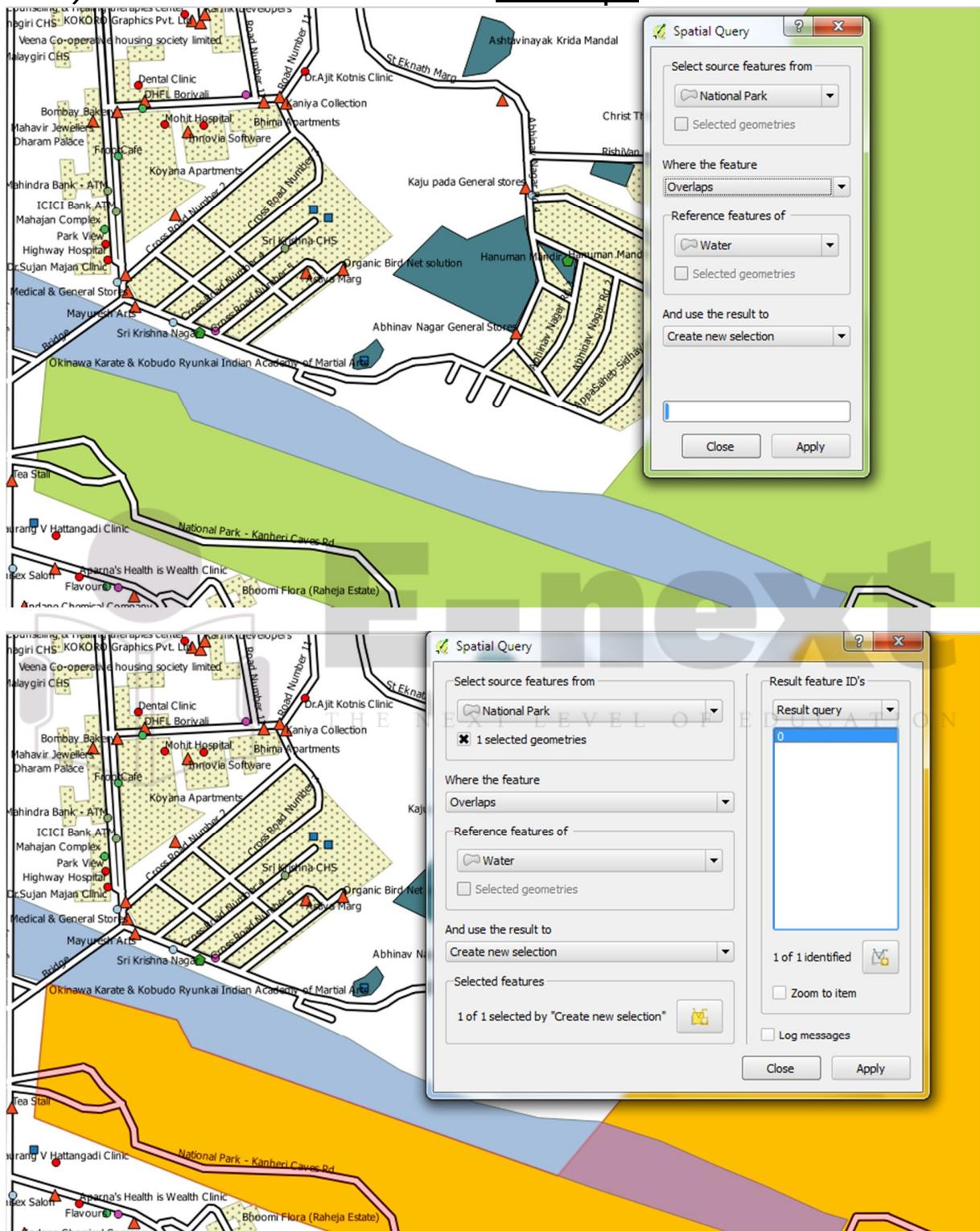
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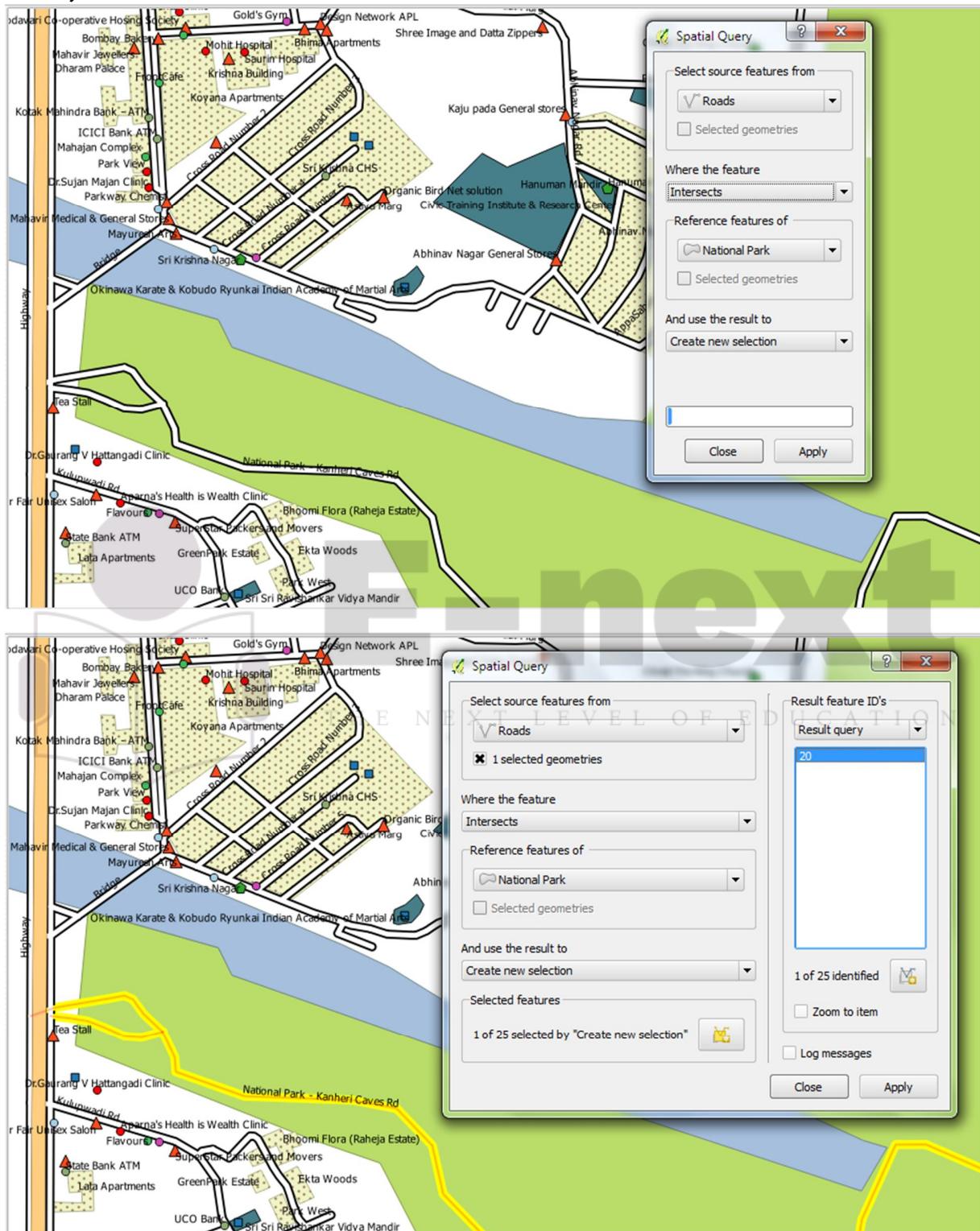
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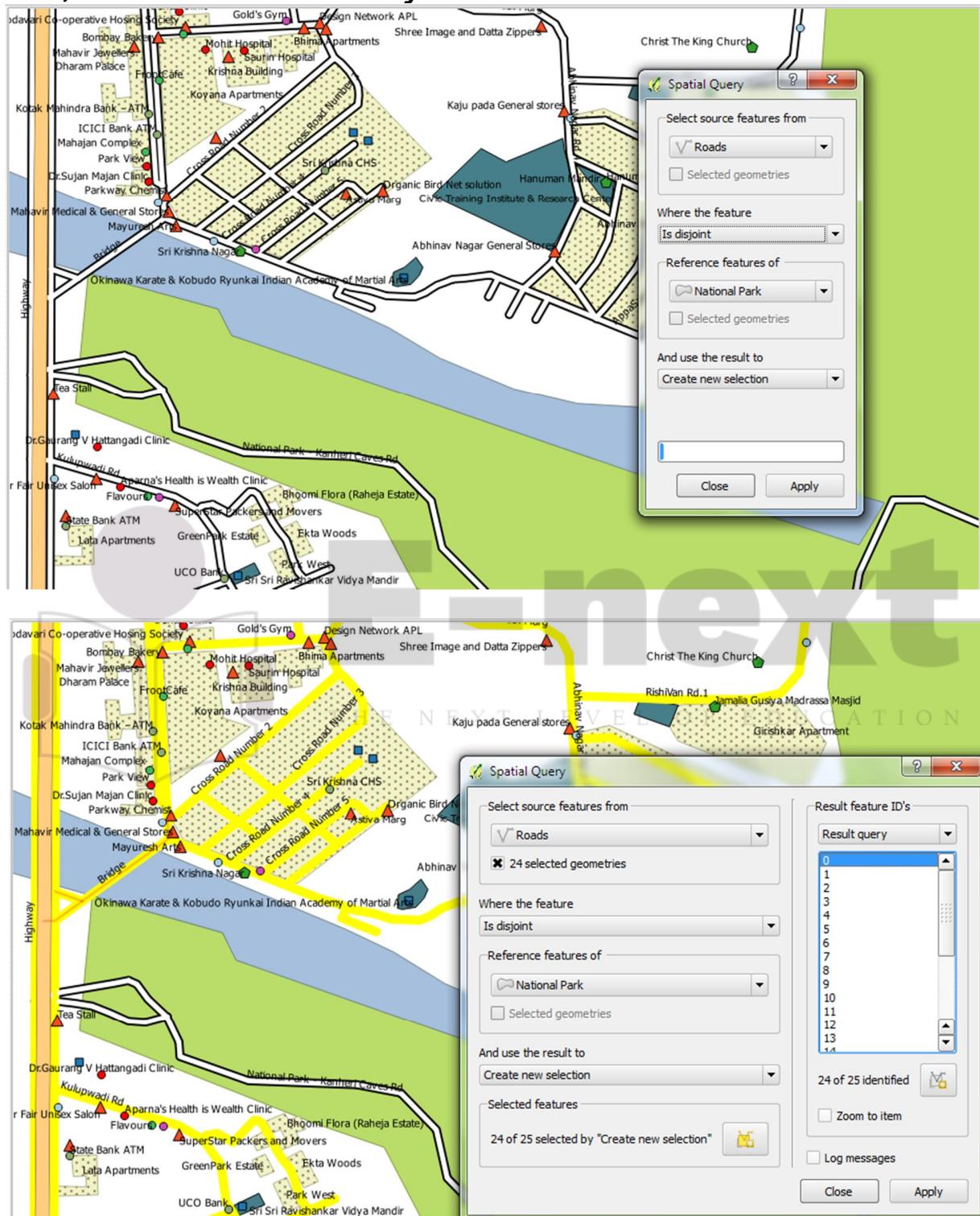
iii) National Park area that Overlaps Water



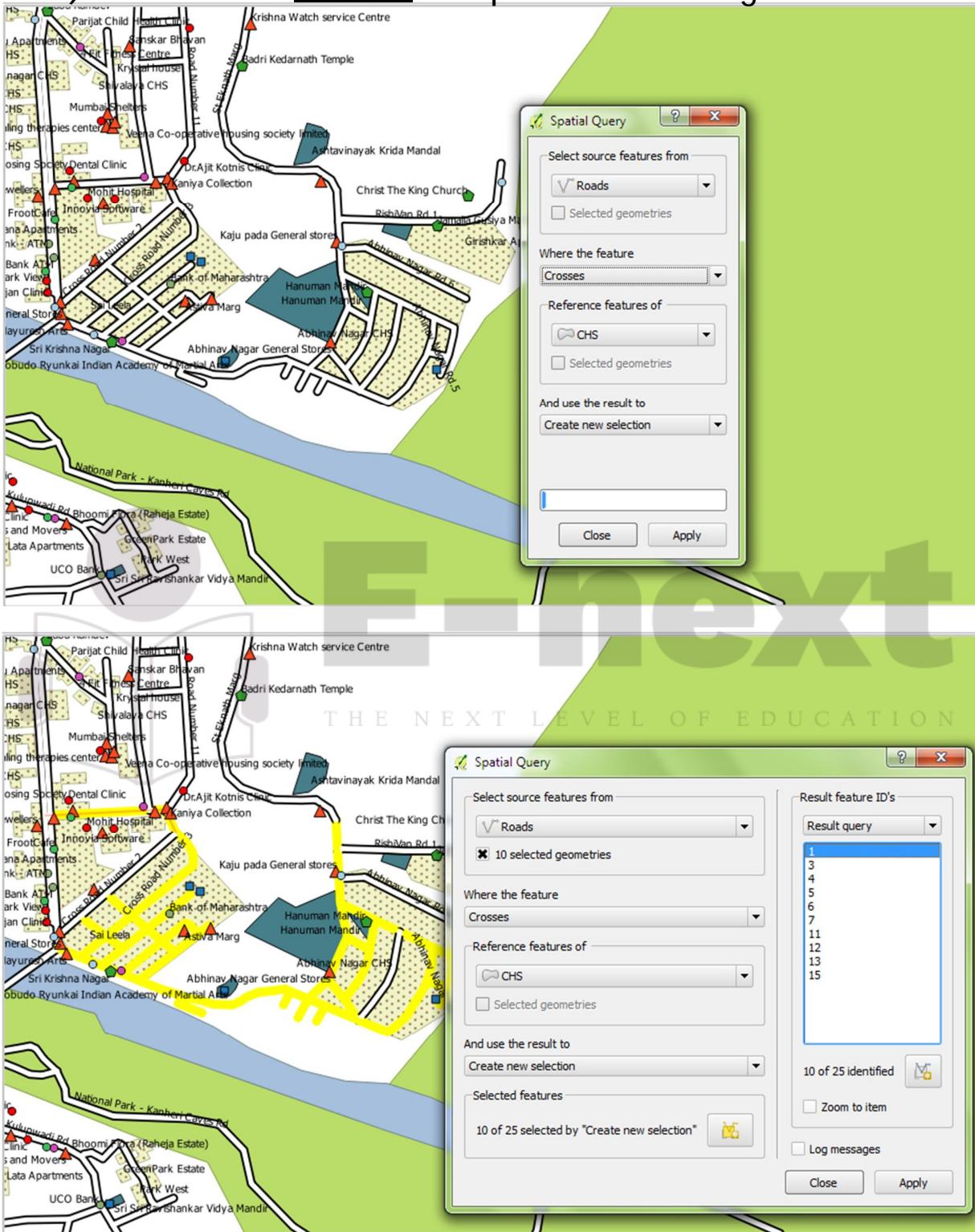
iv) Roads that intersect National Park



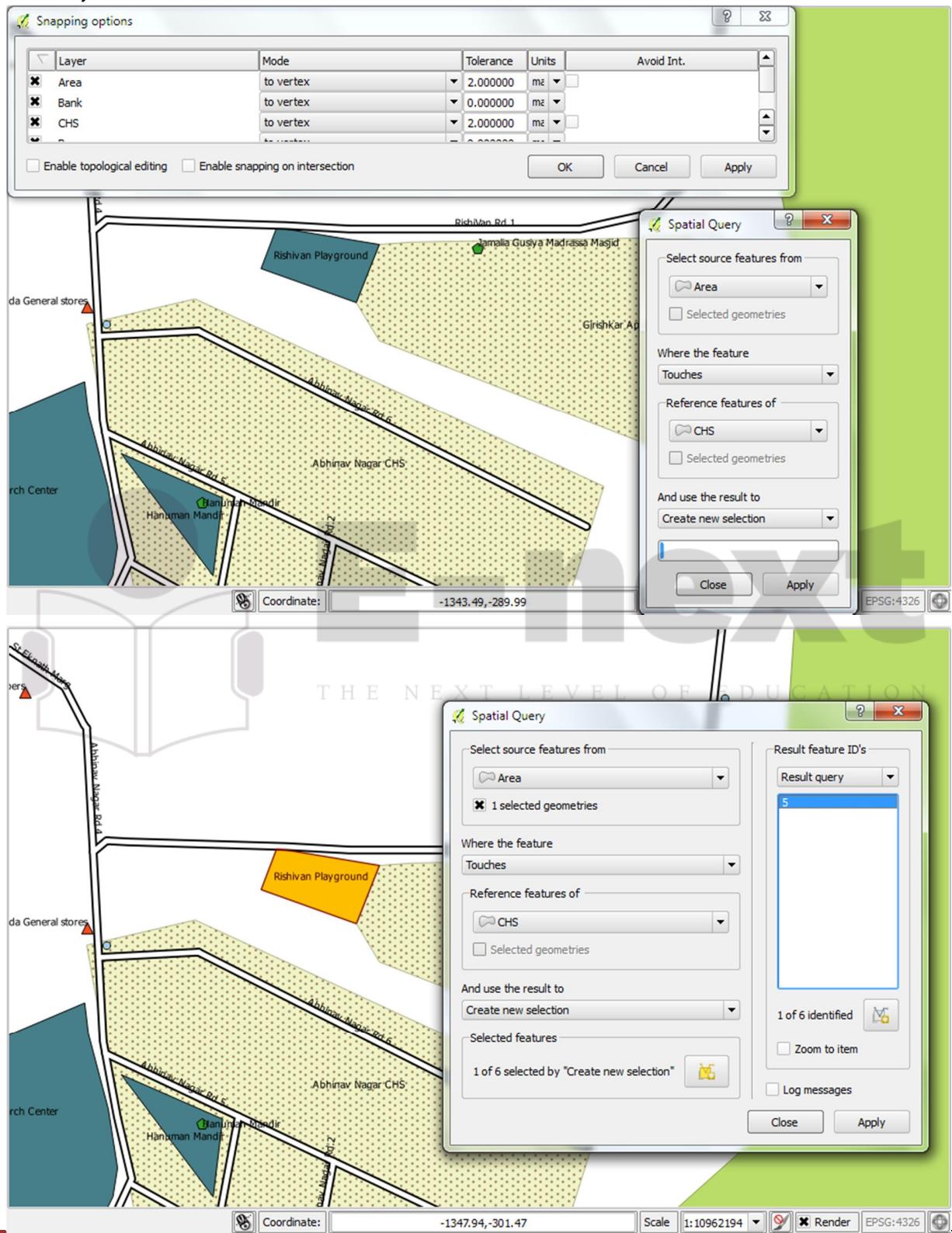
v) Roads that are disjoint from National Park



vi) Roads that crosses co-operative housing societies



vii) Areas that touch societies



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[PRACTICAL 4]

ATTRIBUTE QUERIES AND ANALYSIS TOOLS

AIM: (a) to fire SQL Queries using Query Builder
(b) Analysis tools

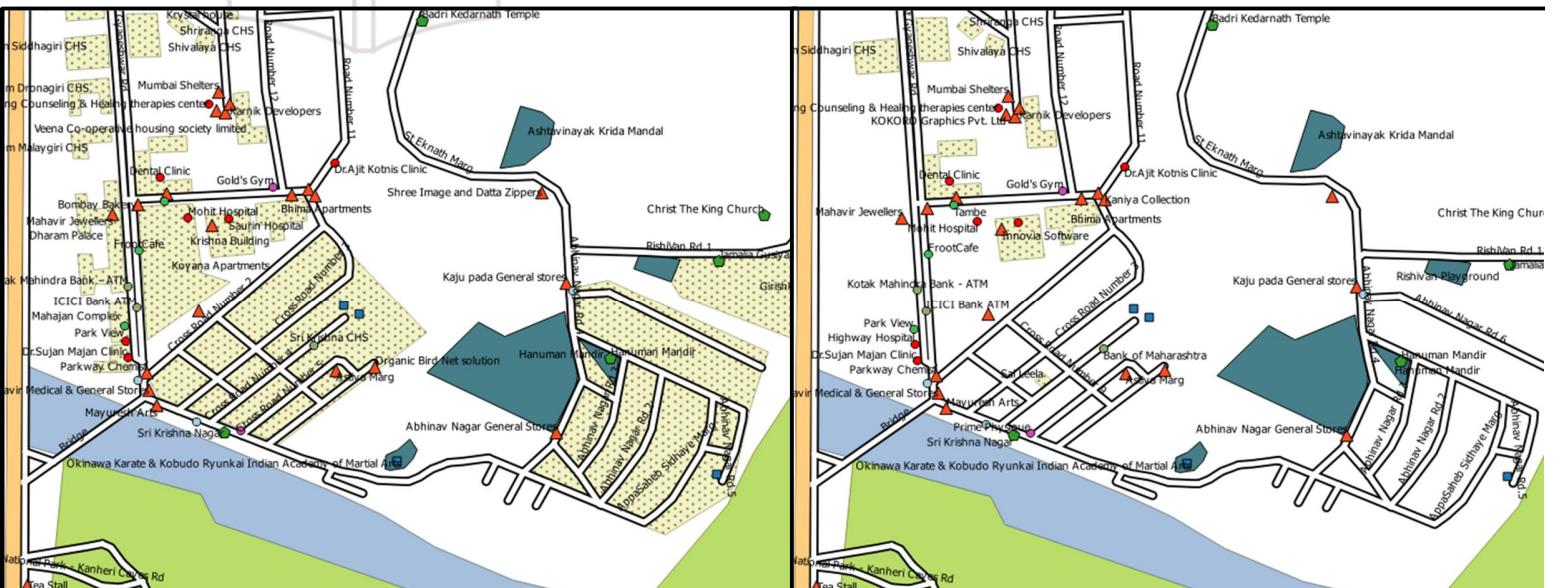
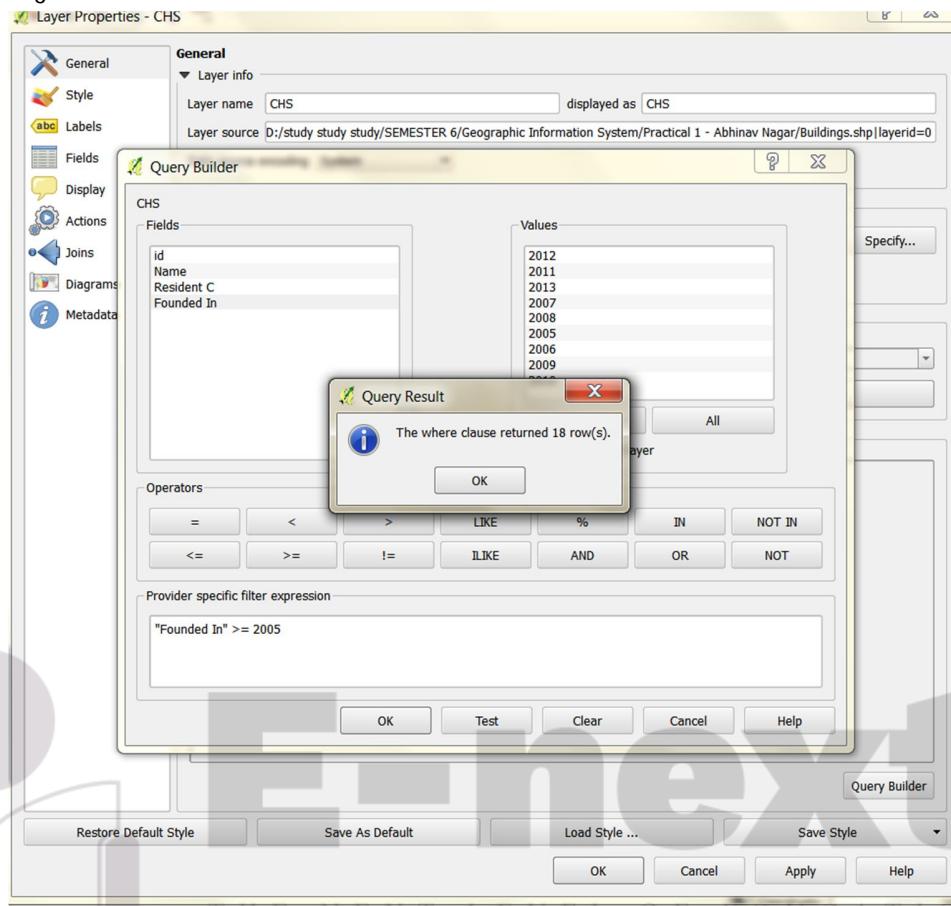
THEORY:

(About Attribute Data and Data Analysis)

Attribute data describes the characteristics of spatial features. For vector data, the amount of attribute data to be associated with a spatial feature can vary significantly. A road segment may only have the attributes of length and speed limit, whereas a polygon may have dozens of properties, interpretations and performance data.



Selecting the Housing societies that were founded after or in 2005



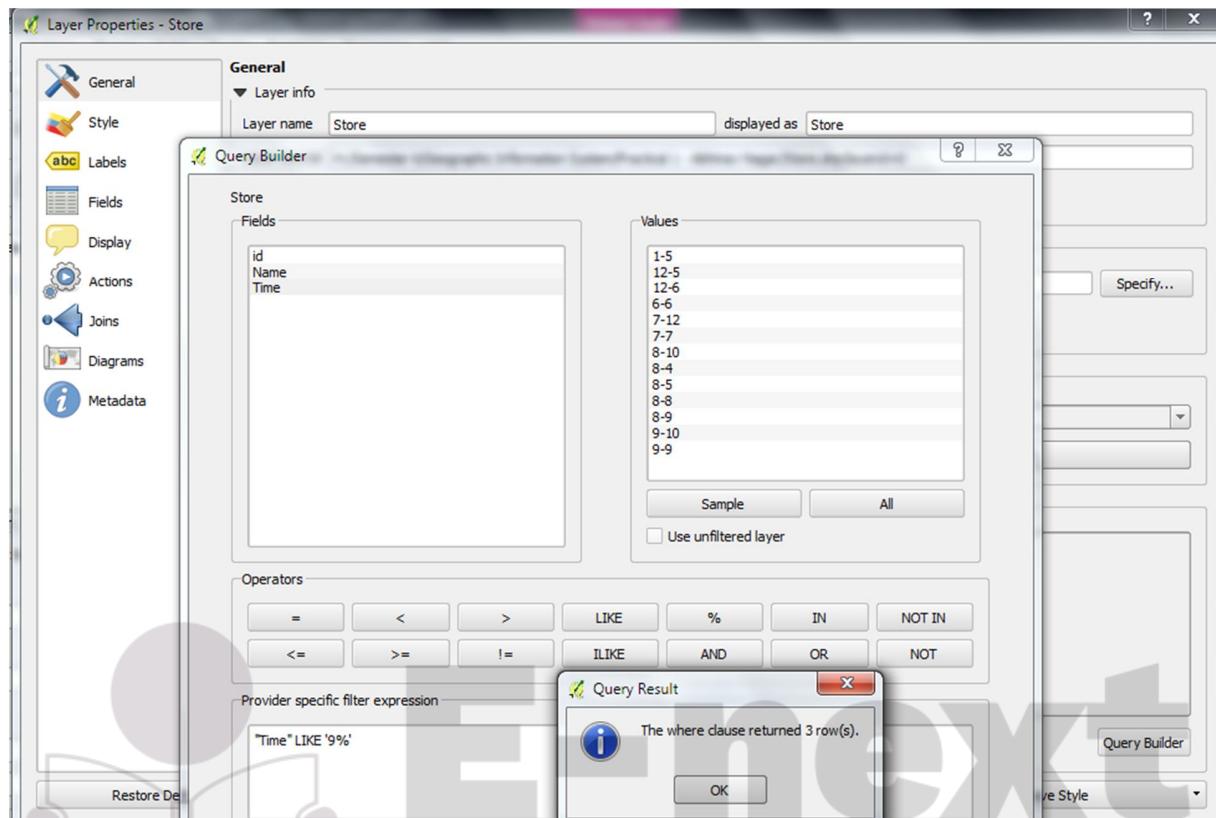
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Selecting stores which open at 9



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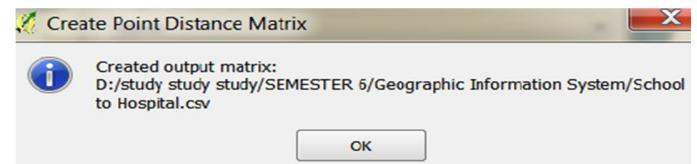
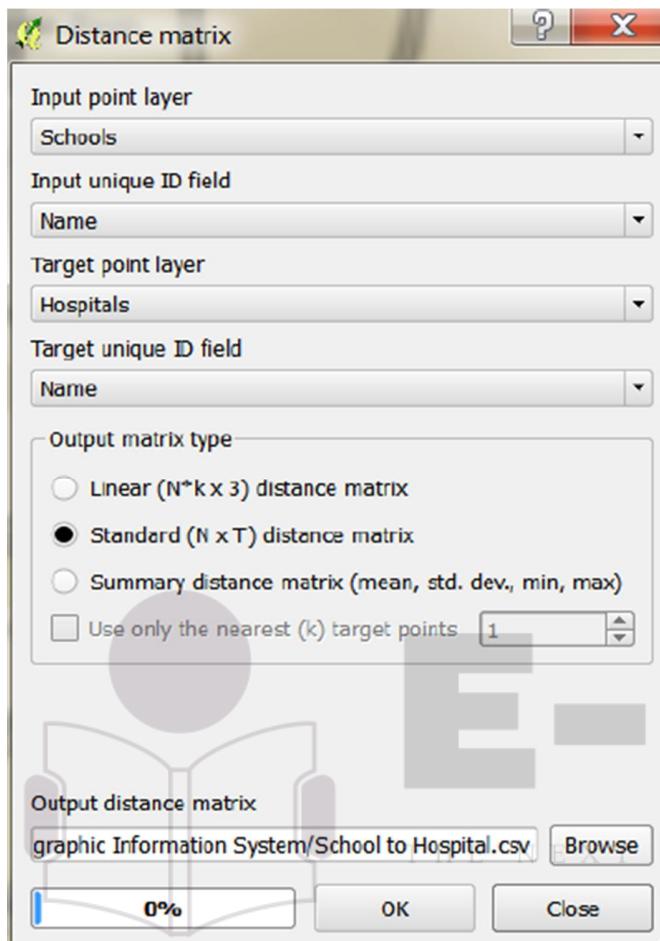
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Distance Matrix

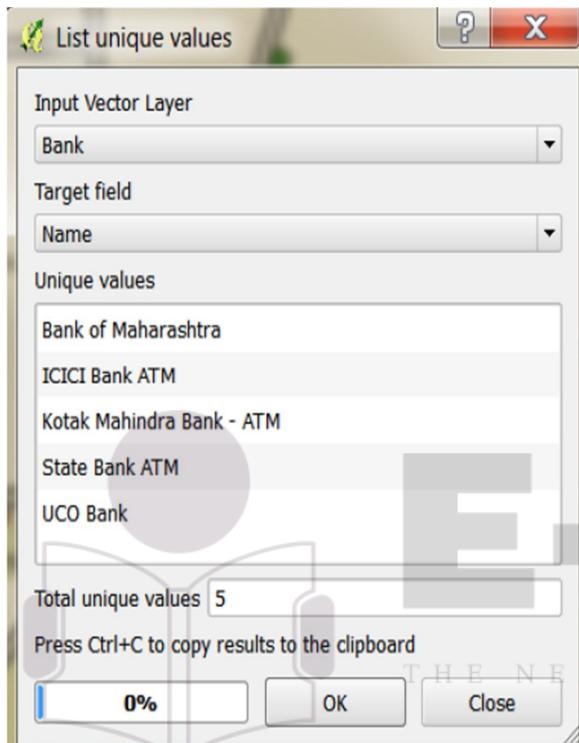
Distance of Schools to Hospital - [Standard N x T distance matrix]



| A | B | C | D | E | F | G | H | I | J | K |
|-----------------------------|---|----------|----------|----------|----------|----------|----------|----------|----------|----------|
| 1 ID | Dr.Ajit Kot Saurin Hos Mohit Hos Dr.Sujan M Highway H Antarang C Dental Clir Parijat Chil Aparna's H Dr.Gaurang | | | | | | | | | |
| 2 Abhinav Vidya Mandir | 80.40305 | 89.52128 | 95.4814 | 97.33318 | 98.28424 | 102.3611 | 102.5379 | 103.4159 | 105.9586 | 107.711 |
| 3 Sri Krishna Vidyalaya | 23.6695 | 23.55595 | 29.16155 | 36.11187 | 35.90373 | 39.82956 | 36.55135 | 56.19467 | 73.81516 | 70.4185 |
| 4 Chogle High School | 25.2643 | 26.33864 | 31.97808 | 38.26203 | 38.18772 | 42.32127 | 39.34697 | 57.57507 | 74.09978 | 70.98605 |
| 5 Okinawa Karate & Kobuc | 50.15259 | 48.25368 | 52.40656 | 46.74577 | 48.17865 | 66.18505 | 60.39443 | 82.16694 | 60.63732 | 60.09214 |
| 6 Little Champs play group | 50.76894 | 64.24972 | 66.82307 | 91.91767 | 89.546 | 48.94421 | 63.39647 | 18.57511 | 143.3945 | 138.1368 |
| 7 Gopal Gardens High Schc | 89.53174 | 73.45227 | 71.30631 | 46.28605 | 48.93074 | 90.19943 | 76.45977 | 119.2041 | 11.94025 | 4.369932 |
| 8 Sri Sri Shankar Vidya Mar | 102.9545 | 92.07382 | 92.43461 | 70.78565 | 73.63541 | 111.0234 | 99.41347 | 135.3356 | 25.35482 | 32.91326 |
| 9 | | | | | | | | | | |

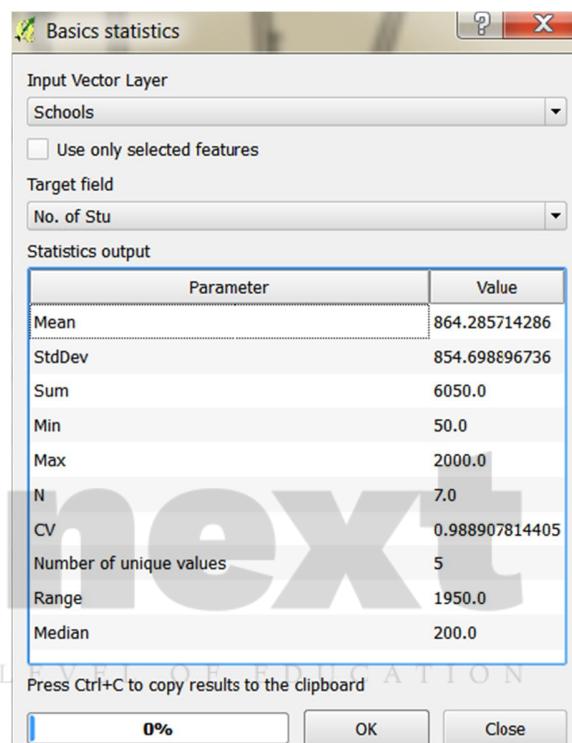
List Unique Values

Listing unique values of Bank Names in the map



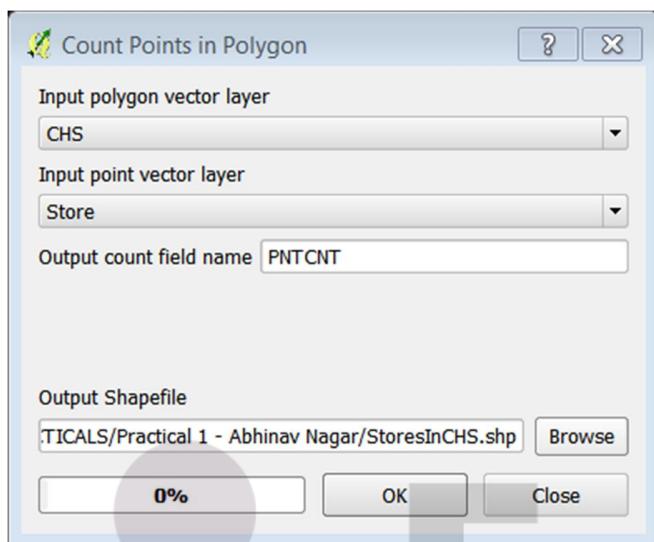
Basic Statistics

Selecting the statistics (min, max, mean, median, etc.) for 'No. of Students' field of 'Schools'



Points in Polygon

Creating a new shape file for Co-operative Housing societies which with the input point vector layer as 'store'.



The attribute table shows the following data:

| | id | Name | Resident C | Founded In | Area | PNTCNT |
|----|----|------------------------------|------------|------------|-----------|---------------|
| 25 | 32 | Sri Krishna CHS | 200 | 1990 | 809.80000 | 2.00000000... |
| 16 | 20 | Godavari Co-operative Hos... | 50 | 2005 | 49.01000 | 1.00000000... |
| 18 | 15 | Dharam Palace | 20 | 1999 | 83.77000 | 1.00000000... |
| 21 | 6 | Krishna Building | 100 | 2011 | 50.28000 | 1.00000000... |
| 0 | 14 | Dipti CHS | 10 | 2012 | 3.32700 | 0.00000000... |
| 1 | 31 | Krystal house | 10 | 2001 | 2.57700 | 0.00000000... |
| 2 | 30 | Gangadhar nagar CHS | 50 | 2011 | 35.50000 | 0.00000000... |
| 3 | 28 | Shivalaya CHS | 30 | 2013 | 7.43100 | 0.00000000... |
| 4 | 27 | Shriranga CHS | 25 | 2012 | 8.32400 | 0.00000000... |
| 5 | 25 | Mitasu Anaprtments | 20 | 1999 | 8.83200 | 0.00000000... |

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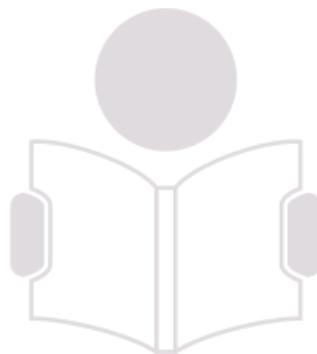
[PRACTICAL 5]

VECTOR DATA CLASSIFICATION

AIM: To perform Vector Data Classification

THEORY:

(About Data Classification) – Nominal, Rule-based, Ratio



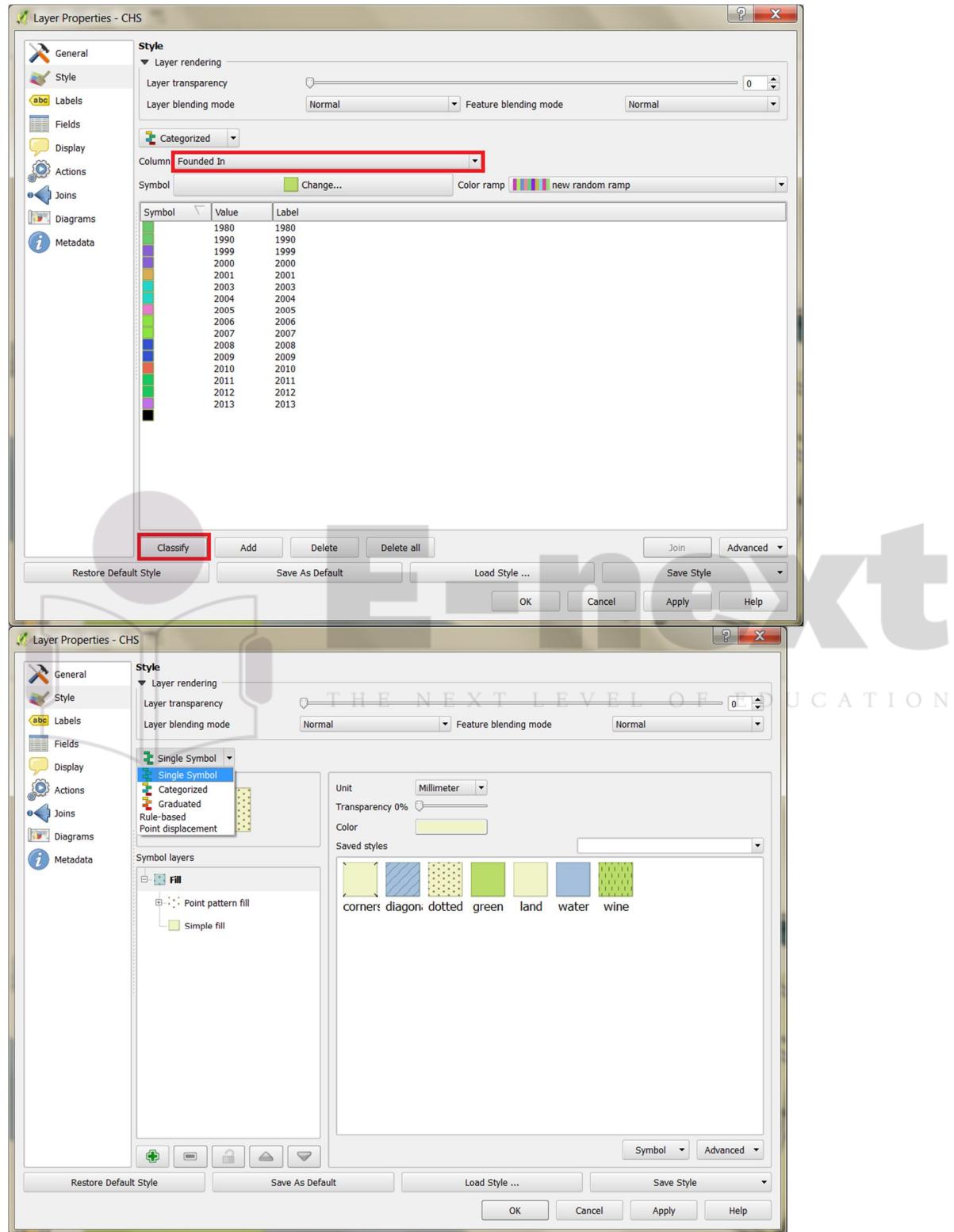
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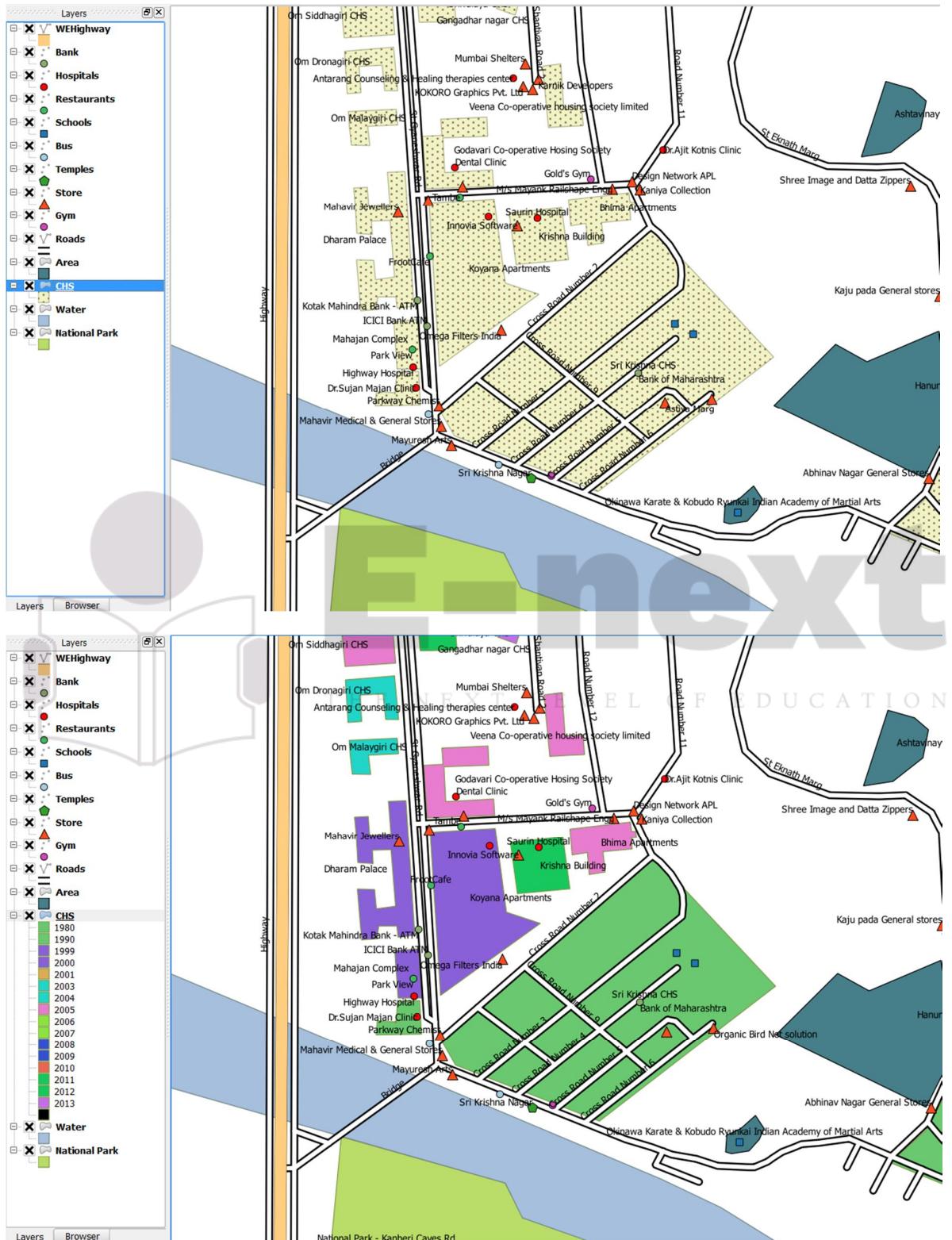


21

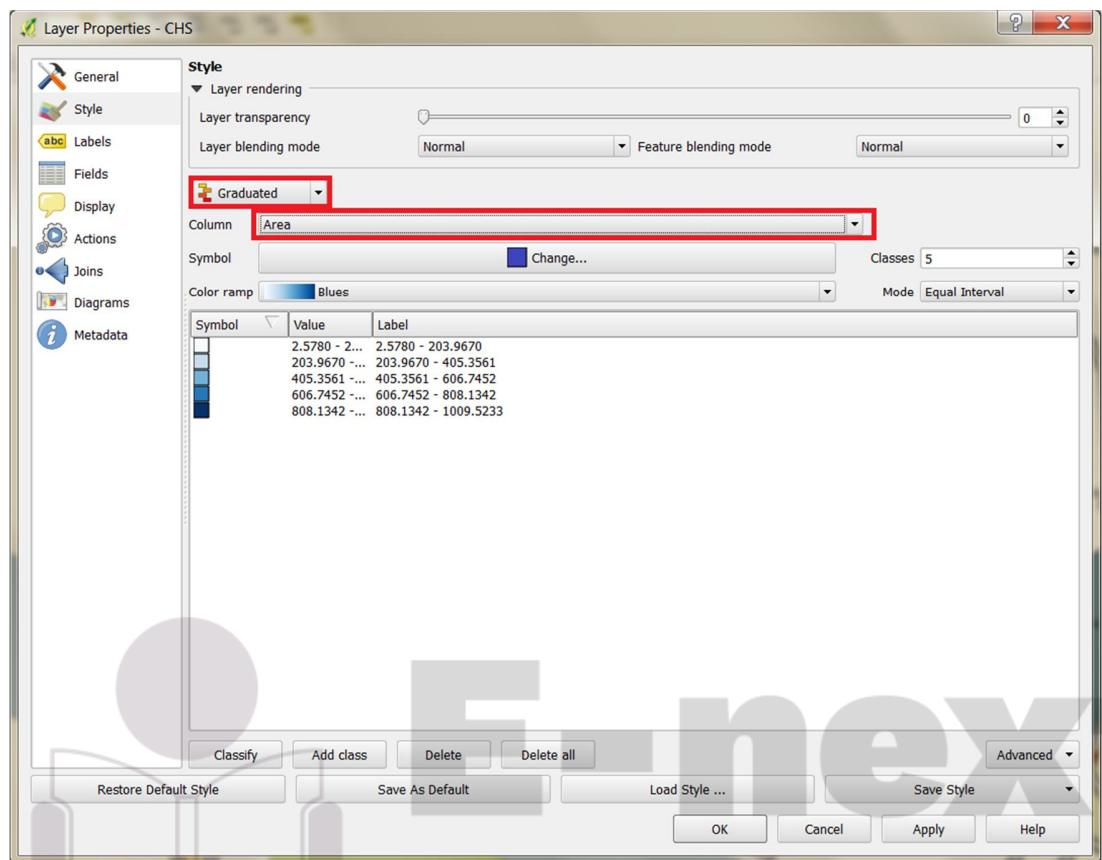
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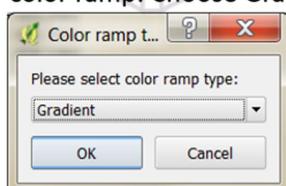




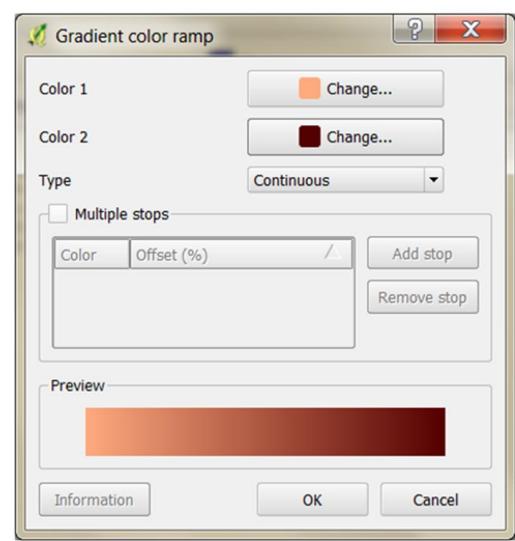
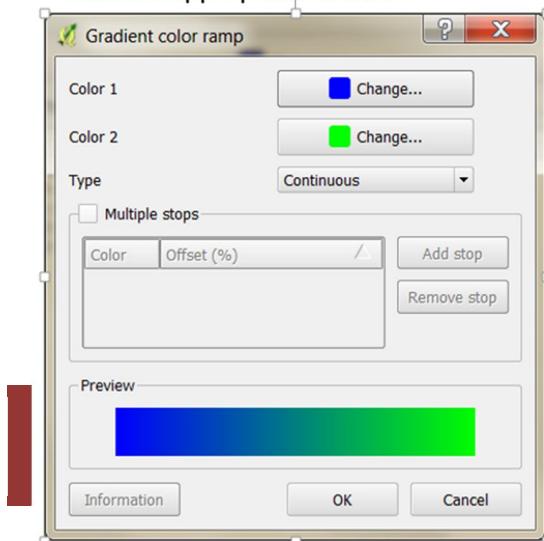
GRADUATED

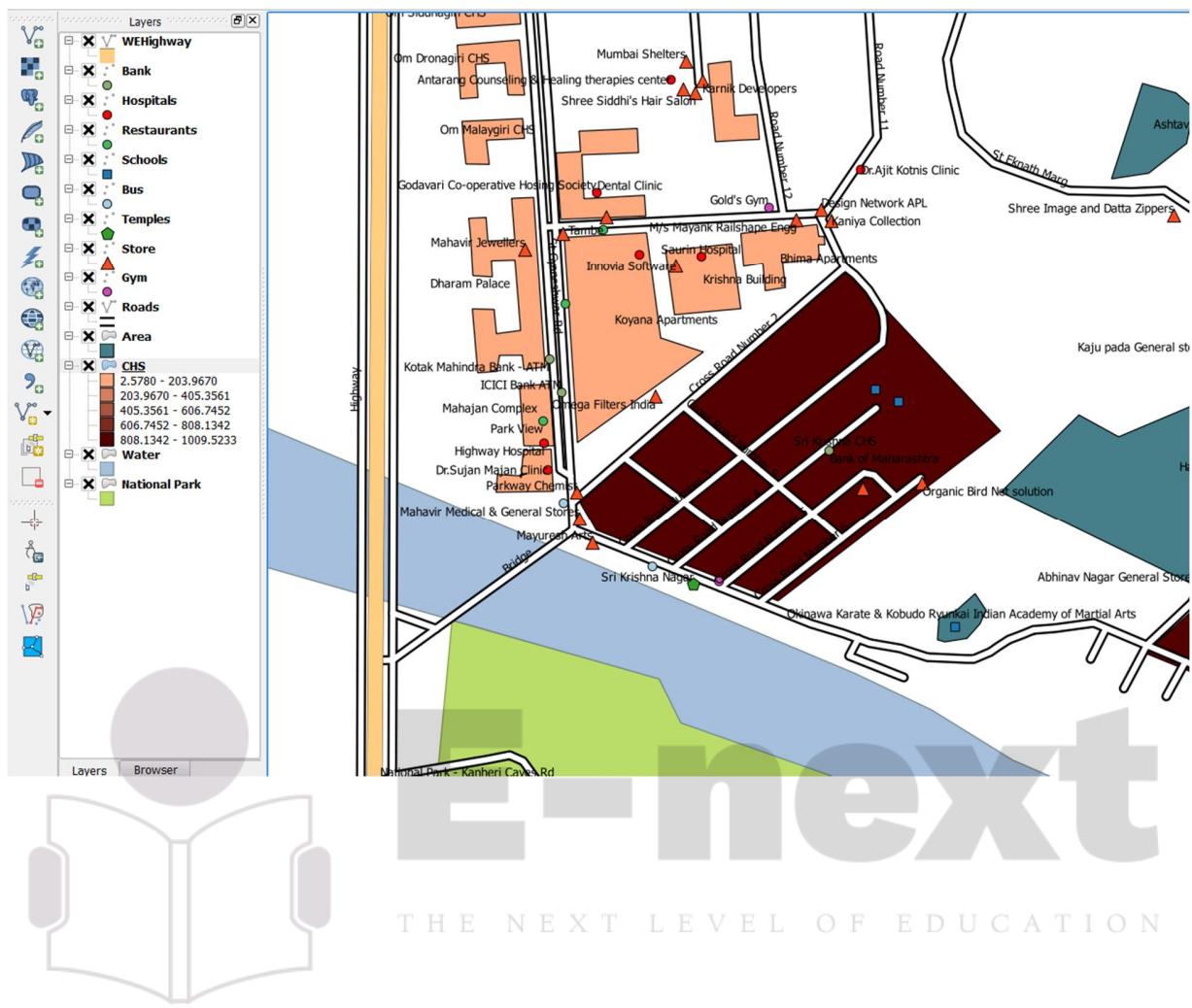


Under Color ramp, choose the option New
color ramp: Choose Gradient



- Choose appropriate colors.





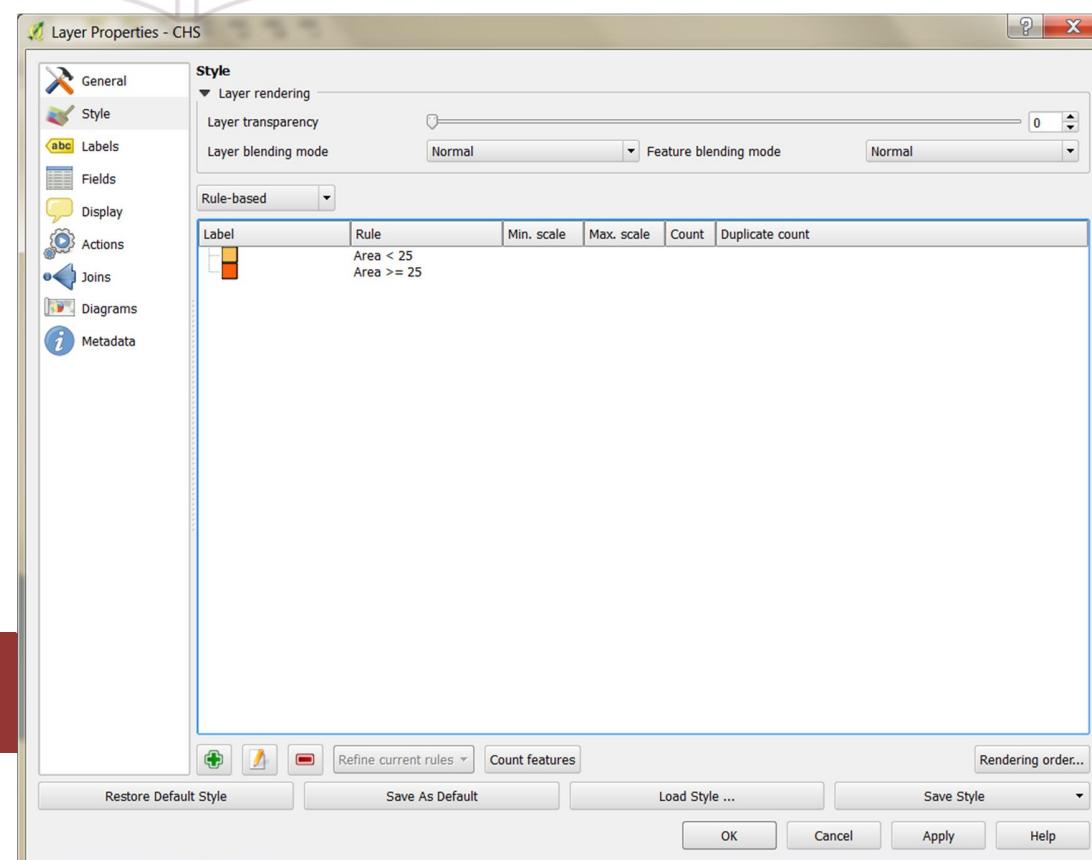
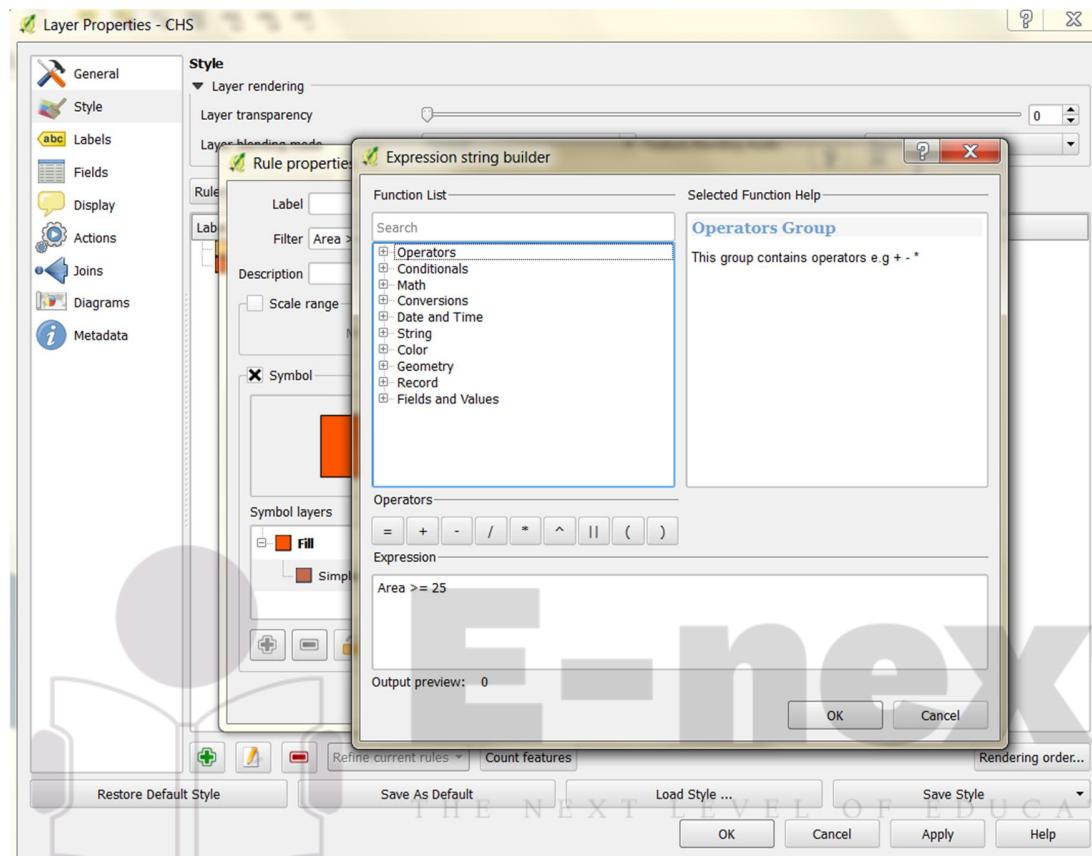
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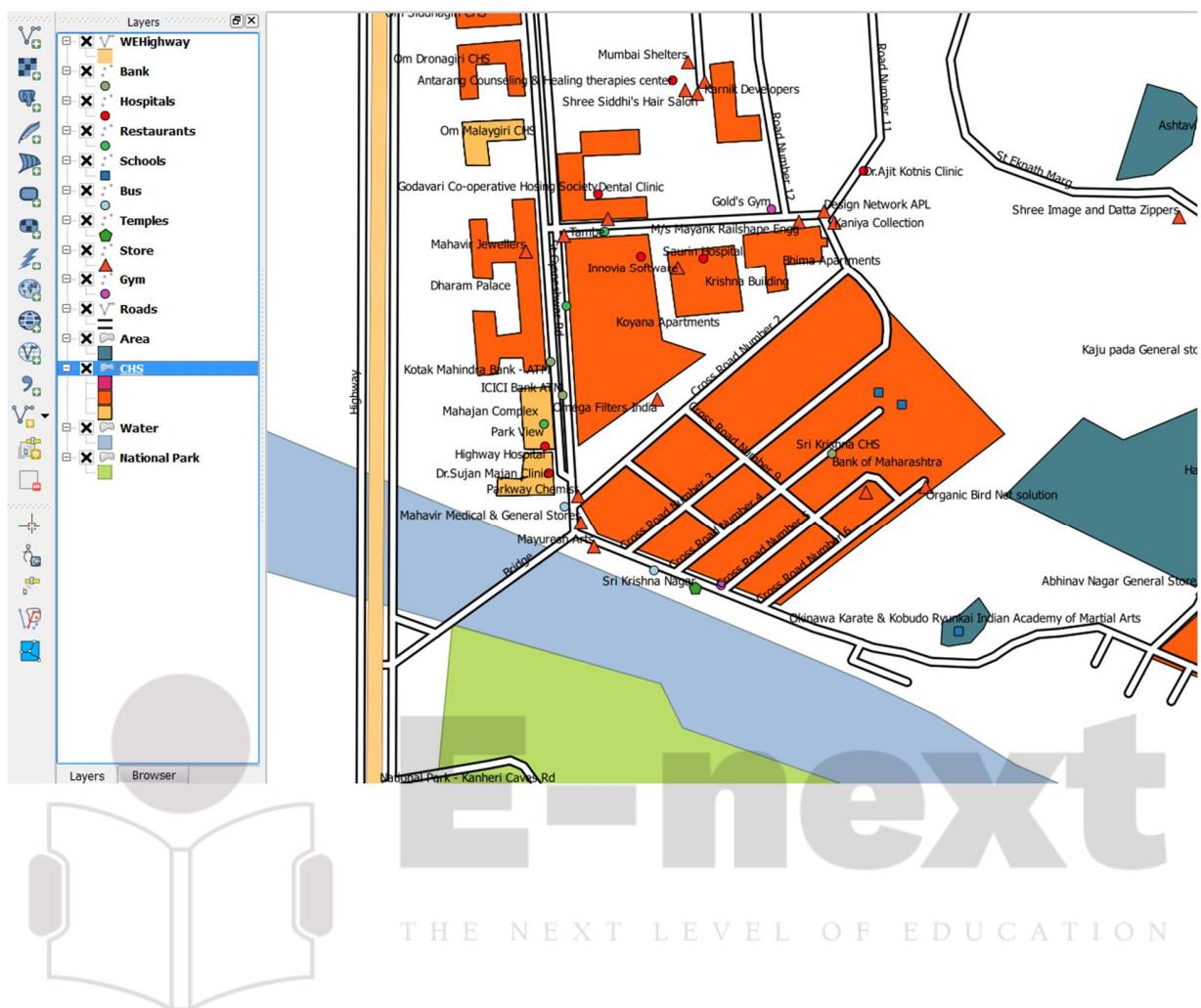
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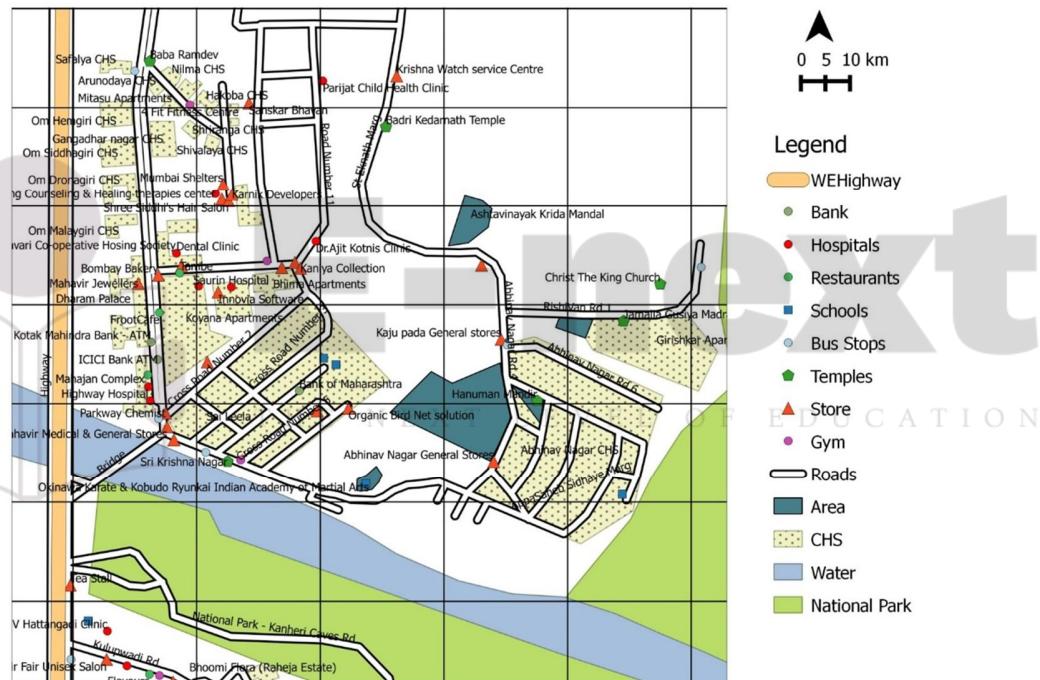
[PRACTICAL 6]

MAP COMPOSER

AIM: To create a map using the 'Print Composer'.

THEORY:

[About the map composer in QGIS]



[PRACTICAL 7]

RASTER DATA ANALYSIS

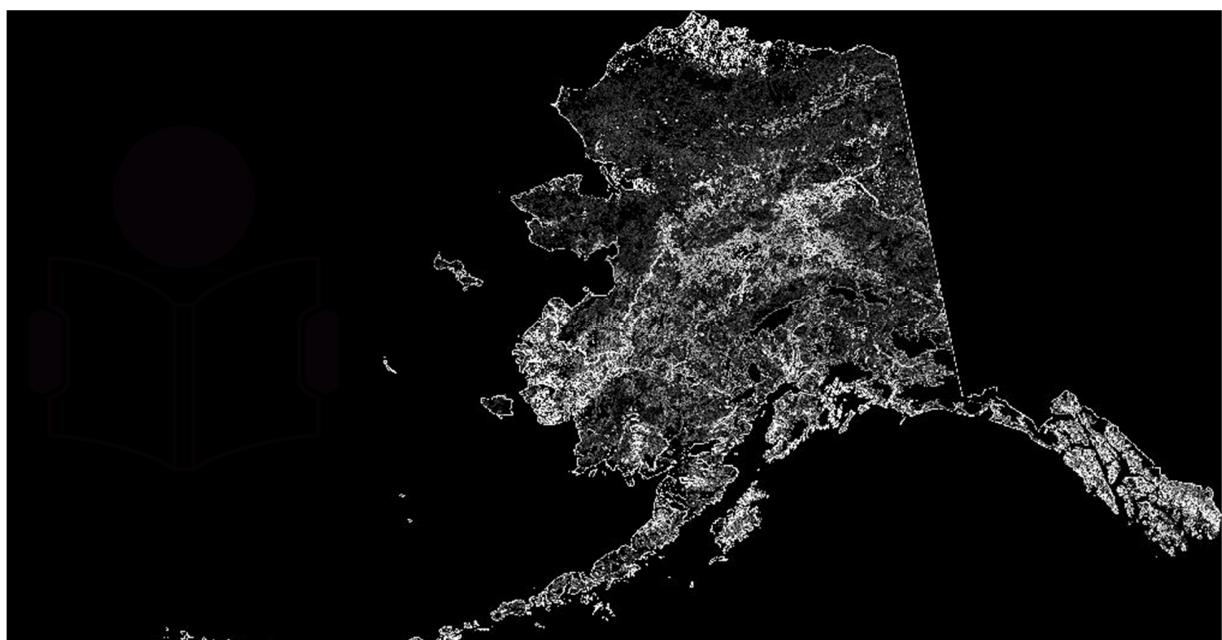
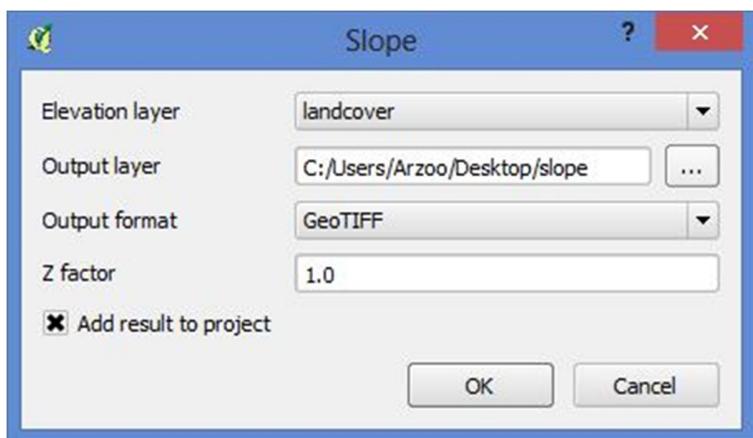
AIM: To Perform Raster data analysis (Terrain analysis - Slope, Aspect, Hill-shade, Relief and Ruggedness index) and Zonal statistics.

THEORY:

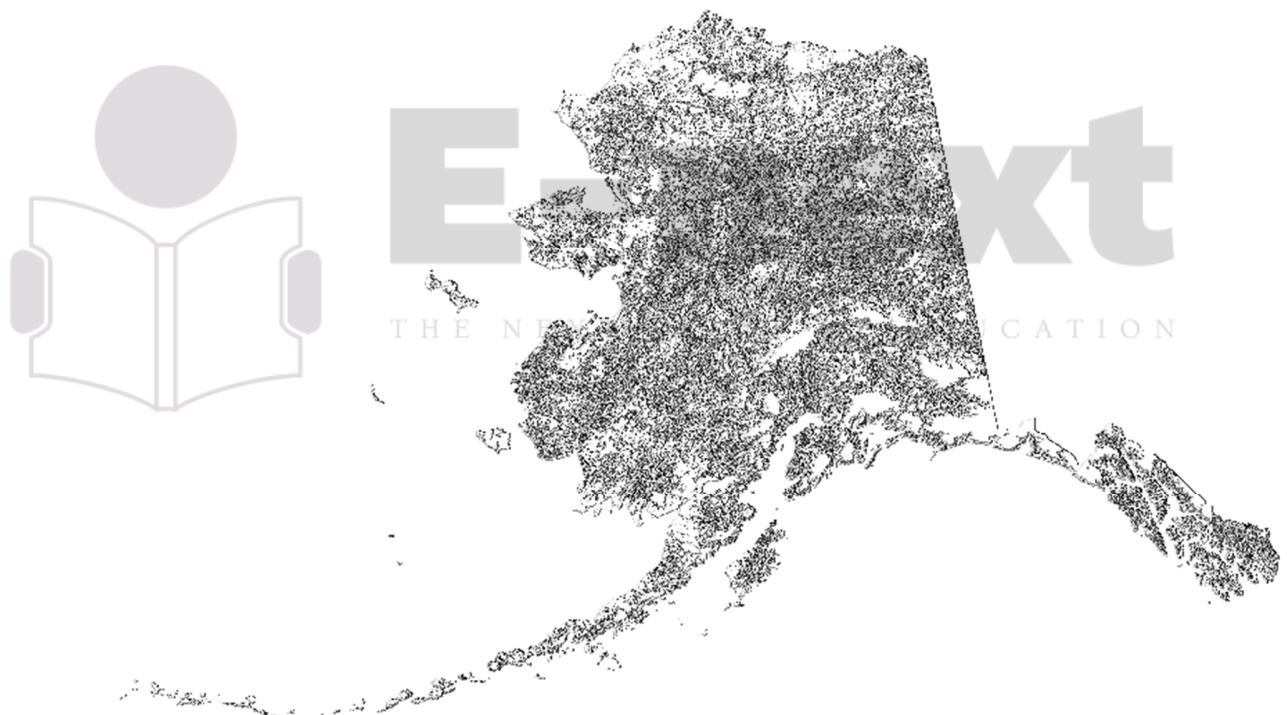
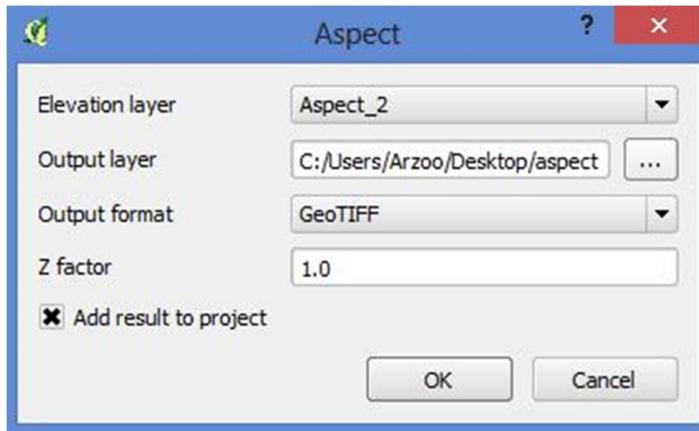
- 1) About raster data analysis.
- 2) About Zonal statistics.



SLOPE

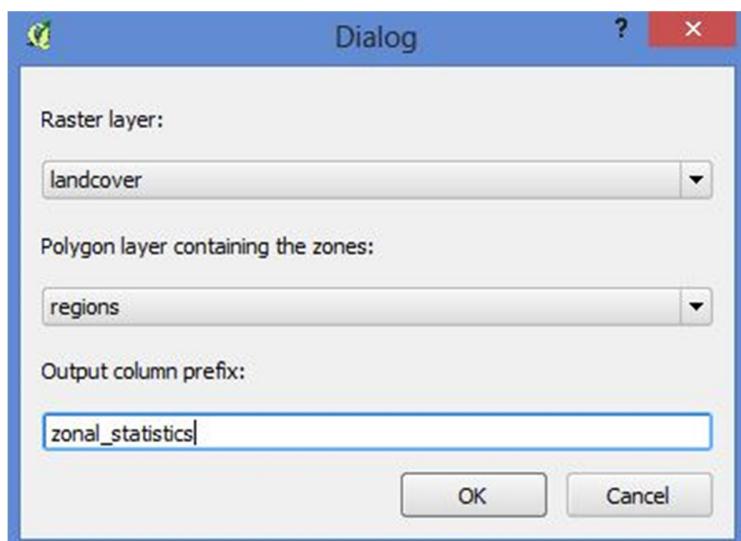


ASPECT



ZONAL STATISTICS

| | NAME_1 | NAME_2 | HASC_2 | TYPE_2 |
|----|--------|--------------------|----------|-------------------|
| 0 | Alaska | Aleutians East | US.AK.AE | Borough |
| 1 | Alaska | Aleutians West | US.AK.AW | Census Area |
| 2 | Alaska | Anchorage | US.AK.AN | Municipality |
| 3 | Alaska | Bethel | US.AK.BE | Census Area |
| 4 | Alaska | Bristol Bay | US.AK.BR | Borough |
| 5 | Alaska | Denali | US.AK.DE | Borough |
| 6 | Alaska | Dillingham | US.AK.DI | Census Area |
| 7 | Alaska | Fairbanks North... | US.AK.FA | Borough |
| 8 | Alaska | Haines | US.AK.HA | Borough |
| 9 | Alaska | Juneau | US.AK.JU | City And Borou... |
| 10 | Alaska | Kenai Peninsula | US.AK.KN | Borough |
| 11 | Alaska | Ketchikan Gate... | US.AK.KT | Borough |
| 12 | Alaska | Kodiak Island | US.AK.KO | Borough |
| 13 | Alaska | Lake and Penin... | US.AK.LA | Borough |
| 14 | Alaska | Matanuska-Sus... | US.AK.MA | Borough |
| 15 | Alaska | Nome | US.AK.NM | Census Area |
| 16 | Alaska | North Slope | US.AK.NH | Borough |
| 17 | Alaska | Northwest Arctic | US.AK.NW | Borough |
| 18 | Alaska | Prince of Wales... | US.AK.PR | Census Area |
| 19 | Alaska | Sitka | US.AK.SI | City And Borou... |
| 20 | Alaska | Skagway-Yakut... | US.AK.SK | Census Area |
| 21 | Alaska | Southeast Fairb... | US.AK.SO | Census Area |
| 22 | Alaska | Valdez-Cordova | US.AK.VA | Census Area |
| 23 | Alaska | Wade Hampton | US.AK.WA | Census Area |
| 24 | Alaska | Wrangell-Peters... | US.AK.WR | Census Area |
| 25 | Alaska | Yukon-Koyukuk | US.AK.YU | Census Area |



| | NAME_1 | NAME_2 | HASC_2 | TYPE_2 | zonalcou_2 | zonalsum_2 | zonalmea_2 |
|----|--------|--------------------|----------|-------------------|--------------------|-------------------|-------------------|
| 0 | Alaska | Aleutians East | US.AK.AE | Borough | 17934.00000000... | 150477.0000000... | 8.390598862495... |
| 1 | Alaska | Aleutians West | US.AK.AW | Census Area | 11678.00000000... | 78232.00000000... | 6.699092310327... |
| 2 | Alaska | Anchorage | US.AK.AN | Municipality | 4538.00000000... | 41112.00000000... | 9.059497576024... |
| 3 | Alaska | Bethel | US.AK.BE | Census Area | 110823.00000000... | 871116.0000000... | 7.860426084837... |
| 4 | Alaska | Bristol Bay | US.AK.BR | Borough | 1314.00000000... | 11879.00000000... | 9.040334855403... |
| 5 | Alaska | Denali | US.AK.DE | Borough | 30812.00000000... | 258258.0000000... | 8.381734389199... |
| 6 | Alaska | Dillingham | US.AK.DI | Census Area | 48702.00000000... | 415260.0000000... | 8.526549217691... |
| 7 | Alaska | Fairbanks North... | US.AK.FA | Borough | 19295.00000000... | 115192.0000000... | 5.970044052863... |
| 8 | Alaska | Haines | US.AK.HA | Borough | 6179.000000000... | 56968.00000000... | 9.219614824405... |
| 9 | Alaska | Juneau | US.AK.JU | City And Borou... | 7199.000000000... | 65900.00000000... | 9.154049173496... |
| 10 | Alaska | Kenai Peninsula | US.AK.KN | Borough | 42797.00000000... | 375607.0000000... | 8.776479659789... |
| 11 | Alaska | Ketchikan Gate... | US.AK.KT | Borough | 3291.000000000... | 7748.000000000... | 2.354299604983... |
| 12 | Alaska | Kodiak Island | US.AK.KO | Borough | 17472.00000000... | 136633.0000000... | 7.820112179487... |
| 13 | Alaska | Lake and Penin... | US.AK.LA | Borough | 69131.00000000... | 567864.0000000... | 8.214317744571... |
| 14 | Alaska | Matanuska-Sus... | US.AK.MA | Borough | 64604.00000000... | 553220.0000000... | 8.563246857779... |
| 15 | Alaska | Nome | US.AK.NM | Census Area | 61536.00000000... | 475595.0000000... | 7.728727899115... |
| 16 | Alaska | North Slope | US.AK.NH | Borough | 235282.0000000... | 1984028.000000... | 8.432553276493... |
| 17 | Alaska | Northwest Arctic | US.AK.NW | Borough | 95299.00000000... | 713332.0000000... | 7.485199215101... |
| 18 | Alaska | Prince of Wales... | US.AK.PR | Census Area | 19987.00000000... | 77944.00000000... | 3.899734827637... |
| 19 | Alaska | Sitka | US.AK.SI | City And Borou... | 7748.000000000... | 47965.00000000... | 6.190629839958... |
| 20 | Alaska | Skagway-Yakut... | US.AK.SK | Census Area | 33720.00000000... | 298588.0000000... | 8.854922894424... |
| 21 | Alaska | Southeast Fairb... | US.AK.SO | Census Area | 67841.00000000... | 509454.0000000... | 7.509529635471... |
| 22 | Alaska | Valdez-Cordova | US.AK.VA | Census Area | 97472.00000000... | 913809.0000000... | 9.375092334208... |
| 23 | Alaska | Wade Hampton | US.AK.WA | Census Area | 46892.00000000... | 380567.0000000... | 8.115819329523... |
| 24 | Alaska | Wrangell-Peters... | US.AK.WR | Census Area | 15502.00000000... | 90252.00000000... | 5.821958456973... |
| 25 | Alaska | Yukon-Koyukuk | US.AK.YU | Census Area | 381069.0000000... | 2498363.000000... | 6.556195859542... |

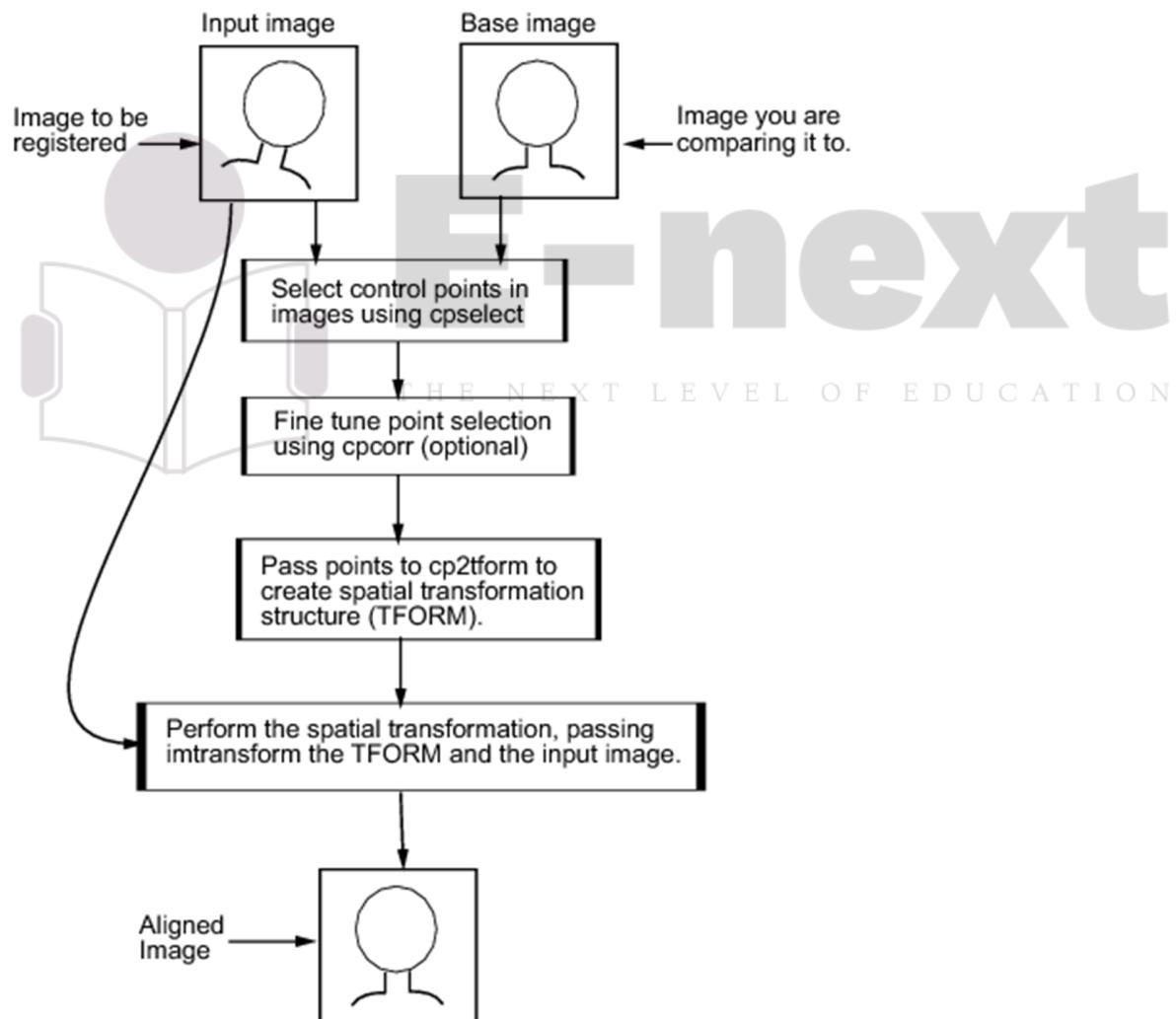
[PRACTICAL 8]

IMAGE REGISTRATION

AIM: To Perform Image Registration using Matlab

THEORY:

- 1) About geometric transformation and types.
- 2) About different Matlab functions.



[Read the Images](#)

[Choose Control Points in the Images](#)

[Save the Control Point Pairs to the MATLAB Workspace](#)

[Fine-Tune the Control Point Pair Placement \(Optional\)](#)

[Specify the Type of Transformation and Infer Its Parameters](#)

[Transform the Unregistered Image](#)

Program for image registration

```
orthophoto = imread('westconcordorthophoto.png');
figure, imshow(orthophoto);
unregistered = imread('westconcordaerial.png');
figure, imshow(unregistered);
cpselect(unregistered, orthophoto);
mytform = cp2tform(input_points, base_points, 'projective');
registered = imtransform(unregistered, mytform);
imshow (registered);
```



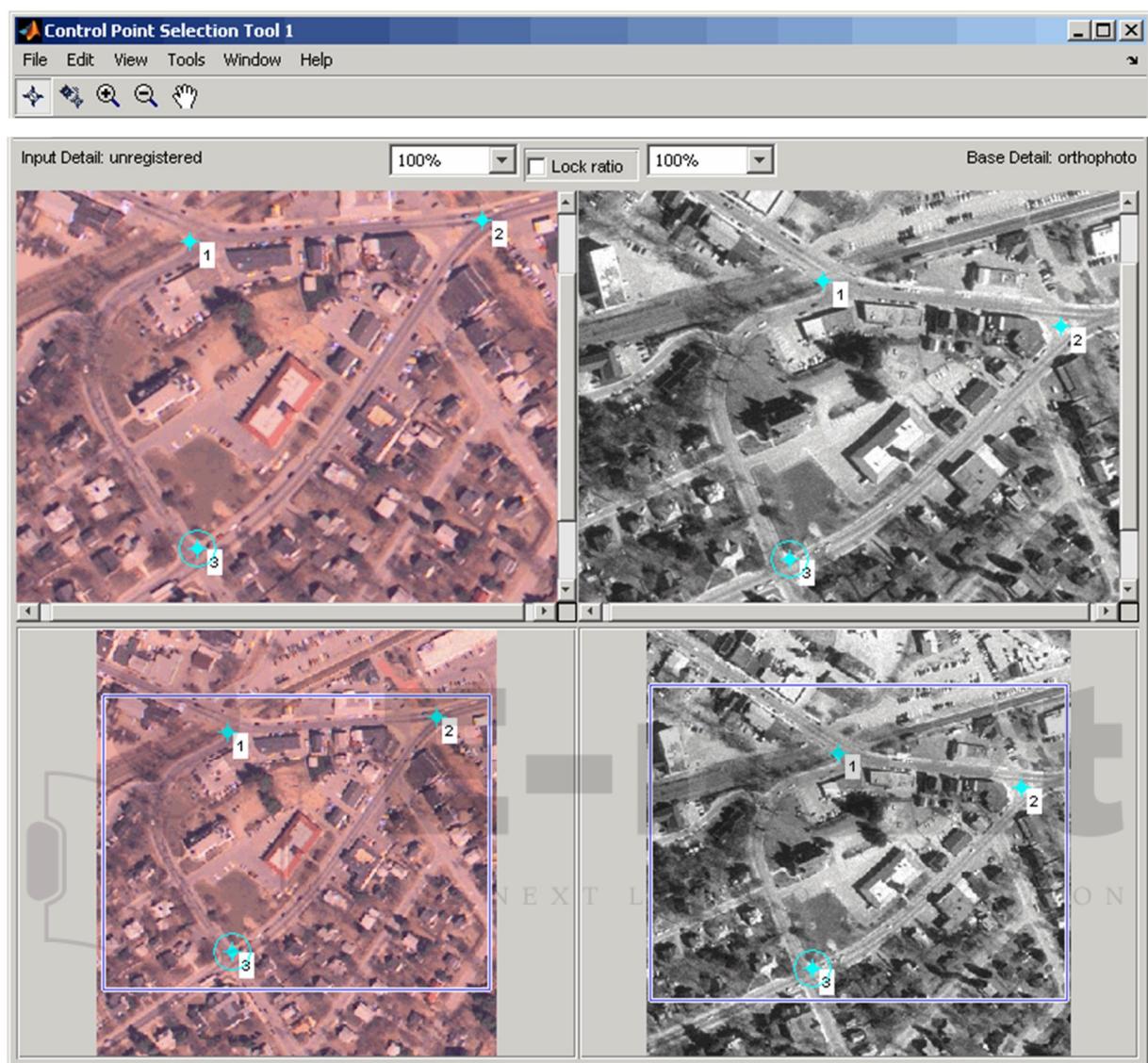
Aerial Photo Image

Image Courtesy of mPower3/Emerge



Orthophoto Image

Image Courtesy of MassGIS





E-next

THE NEXT LEVEL OF EDUCATION

36

- Ms. Radha Satam [TYBsc IT]
- Under the guidance of Prof. Varsha Turkar

[GIS Practical Journal]

tcsC